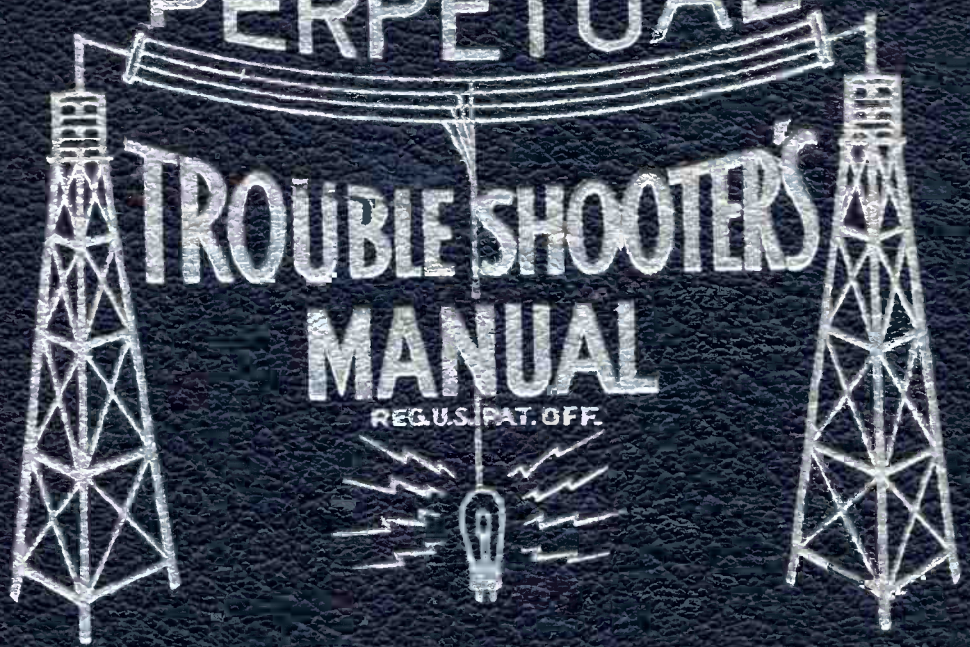
VOLUME XII

PERPETUAL TROUBLE SHOOTER'S MANUAL

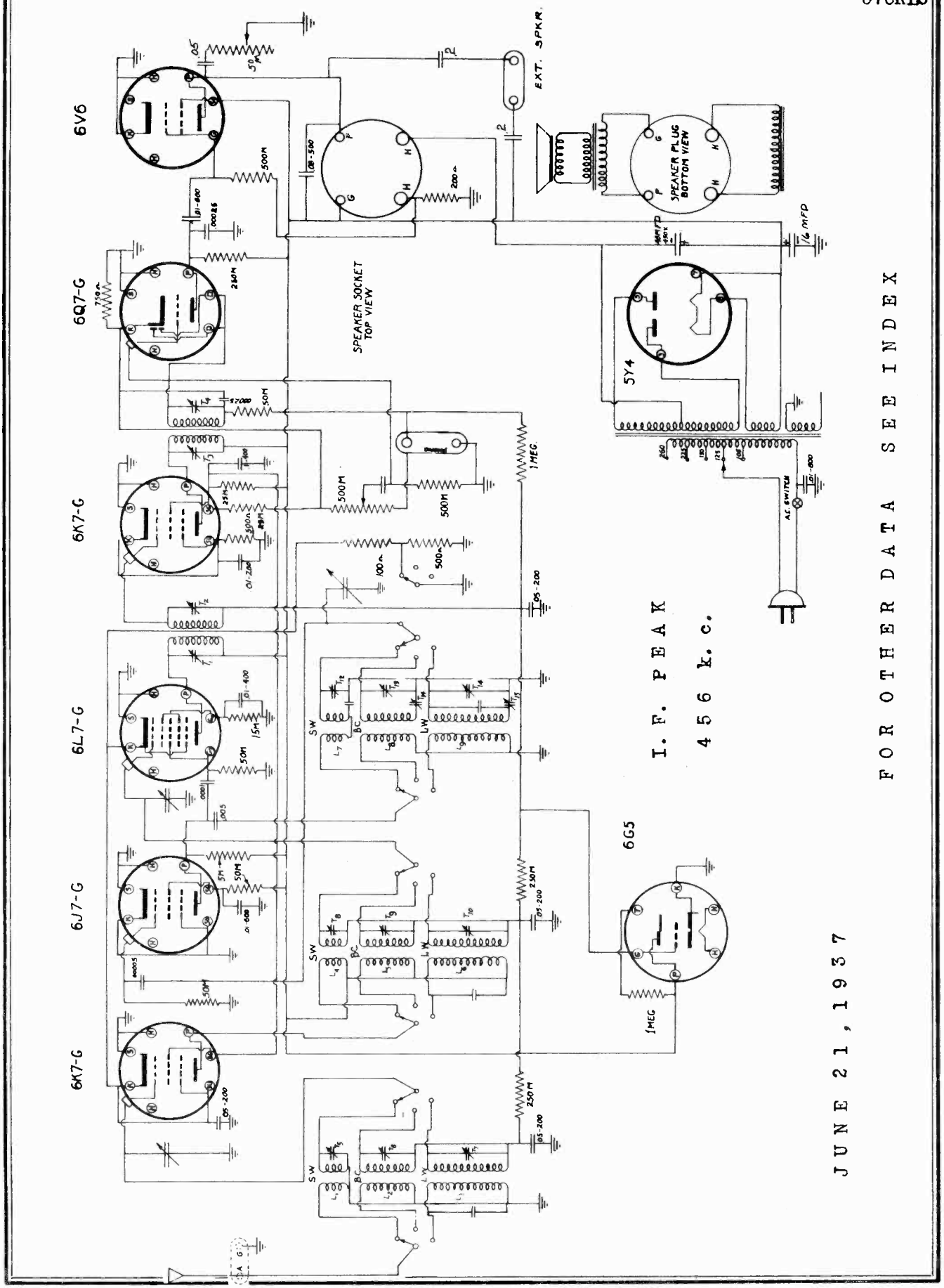
REG. U.S. PAT. OFF.



JOHN F. RIDER

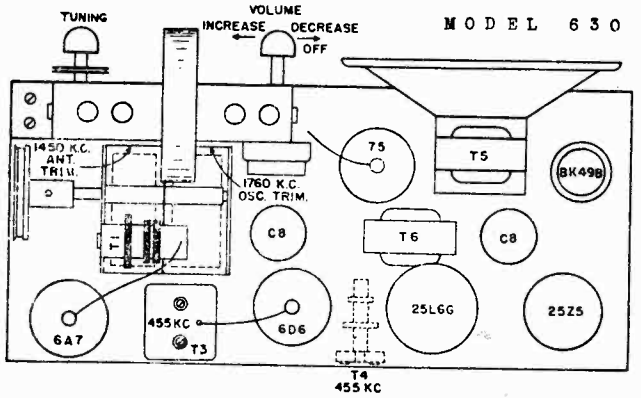
WALGREEN CO.

MODELS 78RLS
C78RLS



ALIGNMENT FOR MODELS 78RLS C78RLS 99RLS C99RLS

LOCATION OF PARTS ON TOP OF CHASSIS



MODEL 630

Follow the procedure outlined below, in order to adjust the push-buttons properly:

1. By means of the Station Selector Knob tune in WITH THE RIGHT HAND AS ACCURATELY AS POSSIBLE the station having the lowest frequency—that is, your selected station which is tuned in nearest the right-hand side of the dial.

2. After the station has been tuned in accurately with the right hand, continue to hold it in its exact position firmly, and with the left hand loosen the Push-Button to be set up for that station by unscrewing the Push-Button about one turn to the left (counter-clockwise).

3. Continuing to hold the Station Selector Knob in its exact position, PUSH THE PUSH-BUTTON IN ALL THE WAY with the left hand.

4. After the Push-Button has been depressed all the way, tighten it gently toward the right (clockwise). Release Push-Button slowly and when in normal position grip button and tighten firmly.

The Push-Button tuning system is now correctly set up for your first selected station of lowest frequency and the Call Letter Tab for this station should be at the extreme right of the Call Letter Holder.
in the order of their frequency—that is, the second station set up will be second lowest in frequency and the third station set up will be third lowest in frequency.

Follow through with this same procedure, setting up the other 3 stations

Carefully check each Push-Button for the accuracy of the setting. If, when tuning in any station with its Automatic Push-Button it does not have equal volume or clarity to that obtained with manual tuning, this may indicate the automatic adjustment for that station was not made accurately. Should there be any inaccuracy in any one of the Push-Button adjustments, correction can be made by repeating the above procedure for that button only. Do not reset those Push-Buttons that are accurately adjusted.

No further adjustments are necessary to operate your radio automatically or manually. To receive any one of your four selected stations for automatic operation, merely push in ALL THE WAY the Button set up for that station.

Intermediate Alignment

Attach the output meter to the receiver. Set the signal generator to 456 KC and attach the output of the generator to the control grid cap of the 6K7G I.F. amplifier tube. Adjust the trimmers on the 2nd I.F. transformer for max. gain. Keep the volume control ofthe receiver at max. and the attonuator of the signal generator as low as possible.

Transfer the output connection of the signal generator from the 6K7G I.F. tube to the control grid of the 6L7 tube and adjust the trimmers on the 1st I.F. transformer. Now go back over the adjustments of both I.F. transformers.

Tuning Circuit Alignment

Long Wave---Set signal generator at 160KC. Attach output of generator to ant. of receiver using a 250 MMFD dummy. Throw band switch to the extreme left, counter clockwise, to band 3. Make sure dial pointer is set properly and then tune dial to approx. 160KC. Adjust long wave padder for max. gain while "rocking" the gang back and forth with each adjustment. The long wave padder is near-est the front edge of chassis.

Set signal generator to 350KC, tune dial to 350 KC and adjust osc. trimmer. Adjust ant. and R.F. stage trimmers for max. output.

B roadcast Band.-- Set signal generator to 600 KC, adjust band switch to broadcast position. Tune dial to 600 KC and adjust the other padder condenser for max. gain while "rocking" the gang back and forth with each adjustment.

Set signal generator to 1500 KC and tune dial to 1500 KC. Adjust osc. trimmer to bring in signal and adjust ant. and R.F. trimmers for max. gain.

Short Wave Band.--Change dummy ant. to 400 ohm resistor. Set signal generator to 15 M.C. Turn band switch to short wave band and tune dial to 15 M.C. Adjust osc. trimmer to bring in signal and adjust ant. and R.F. trimmers for max. gain.

Make the usual tests for image. Take care not to peak set on image when adjusting the short wave band.

The positions of the various trimmers are as follows:

On the trimmer strip nearest the front edge of the chassis are the three antenna trimmers. The one nearest the band switch is band 2 trimmer, the next trimmer is for band 1 and the trimmer out towards the side of chassis on this same strip is for band 3.

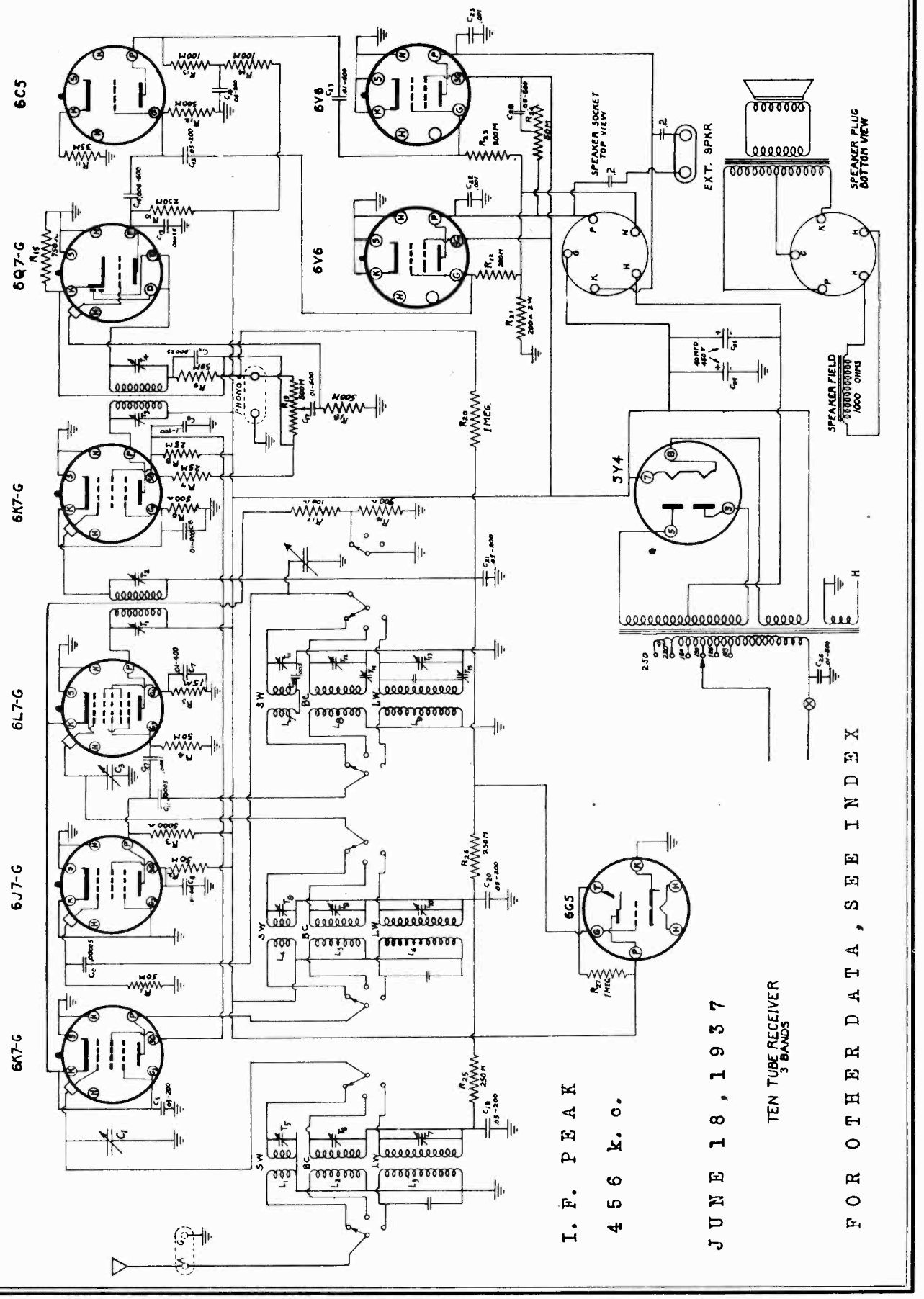
The center trimmer strip of 3 trimmers is for osc. adjustments.

The trimmer strip of 3 trimmers just back of the band switch is for R.F. interstage adjustments.

The trimmers for each band are in the same respective positions on all three trimmer strips.

WALGREEN CO.

MODELS 99RLS, C99RLS

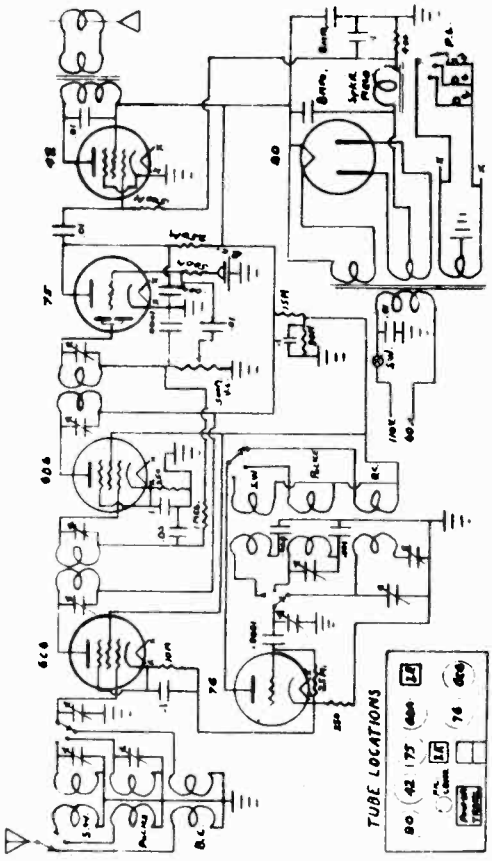


MODEL 300CL
MODEL 300P
MODEL 204R
MODEL 253CL

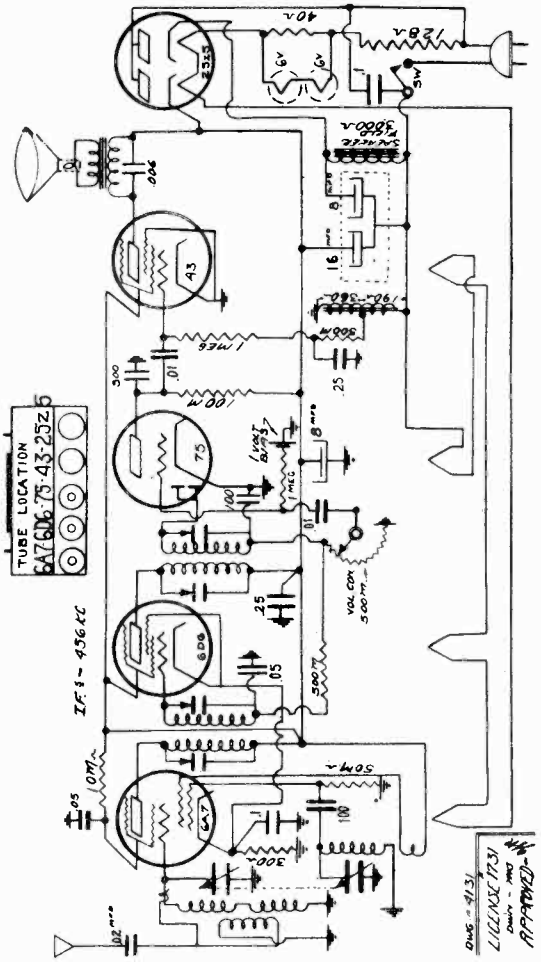
WALGREEN CO.

MODEL 300CL

6 TUBE 3 BAND A.C. SUPERHETERODYNE

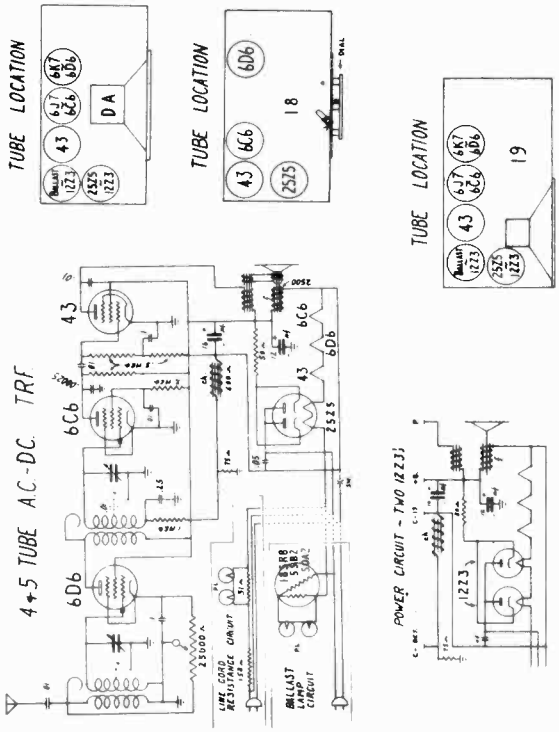


MODEL 300P (Late)

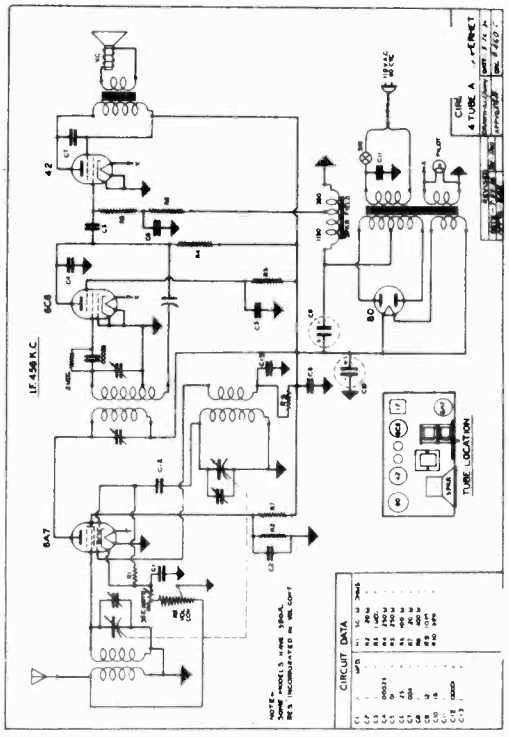


MODEL 253CL

4-5 TUBE A.C.-D.C. TRF



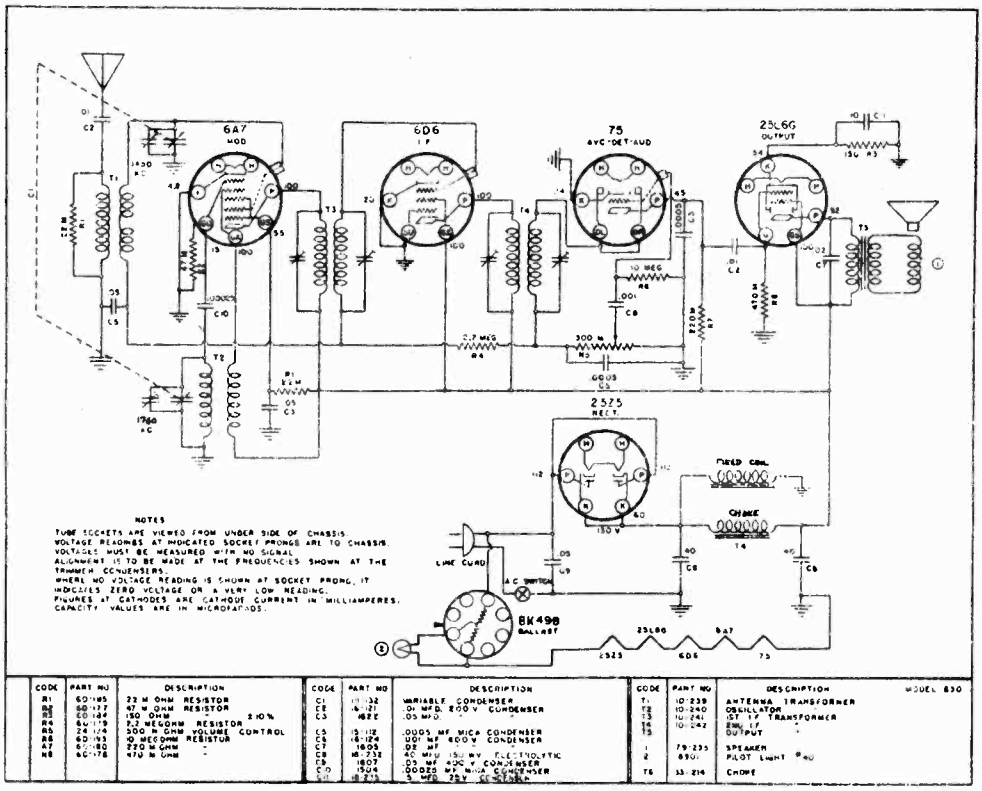
MODEL 204R



WALGREEN CO.

MODELS 604, 606, 653
MODEL 630

AETNA MODEL 630 I. F. PEAK 455 K.C. FOR OTHER DATA SEE INDEX



CODE	PART NO	DESCRIPTION
R1	60-1185	22 M OHM RESISTOR
R2	60-1127	47 M OHM RESISTOR
R3	60-1184	150 OHM " ± 10%
R4	64-1179	.2 MEGOHM RESISTOR
R5	24-1174	500 M OHM VOLUME CONTROL
R6	60-1193	.10 MEGOHM RESISTOR
R7	60-1180	890 M OHM "
R8	60-1178	470 M OHM "

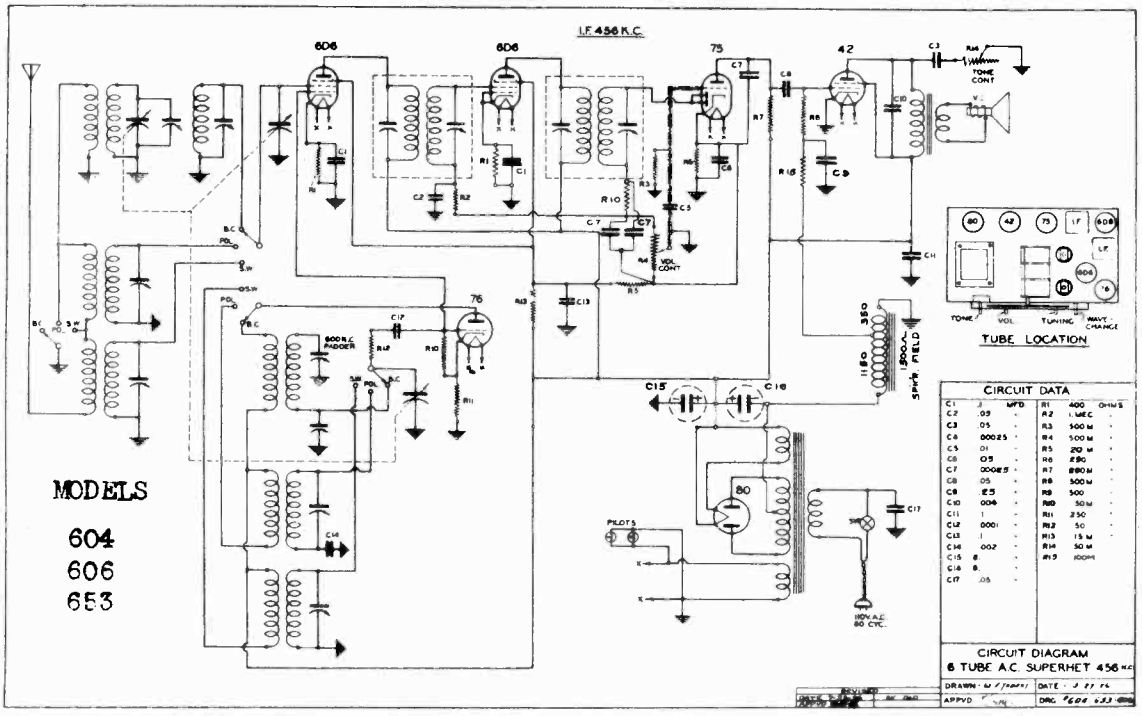
CODE	PART NO	DESCRIPTION
C1	19-132	VARIABLE CONDENSER
C2	14-121	.01 MFD. 600 V CONDENSER
C3	4822	.05 MFD. "
C4		.00025 MF MICA CONDENSER
C5	15-118	.0005 MF MICA CONDENSER
C6	14-1124	.001 MF 600 V CONDENSER
C7	14003	.02 MF "
C8	18-232	40 MFD 150 WV ELECTROLYTIC
C9	1807	.05 MF 400 V CONDENSER
C10	1504	.0005 MF MICA CONDENSER
C11	18-233	5 MFD. 25 V ELECTROLYTIC

CODE	PART NO	DESCRIPTION
T1	10-239	ANTENNA TRANSFORMER
T2	10-240	OSCILLATOR "
T3	10-241	1ST I.F. TRANSFORMER
T4	10-242	2ND I.F. "
T5		OUTPUT "
	79-235	SPEAKER
	8930	PILOT LIGHT #40
T6	33-214	CHOKE

MODEL 630

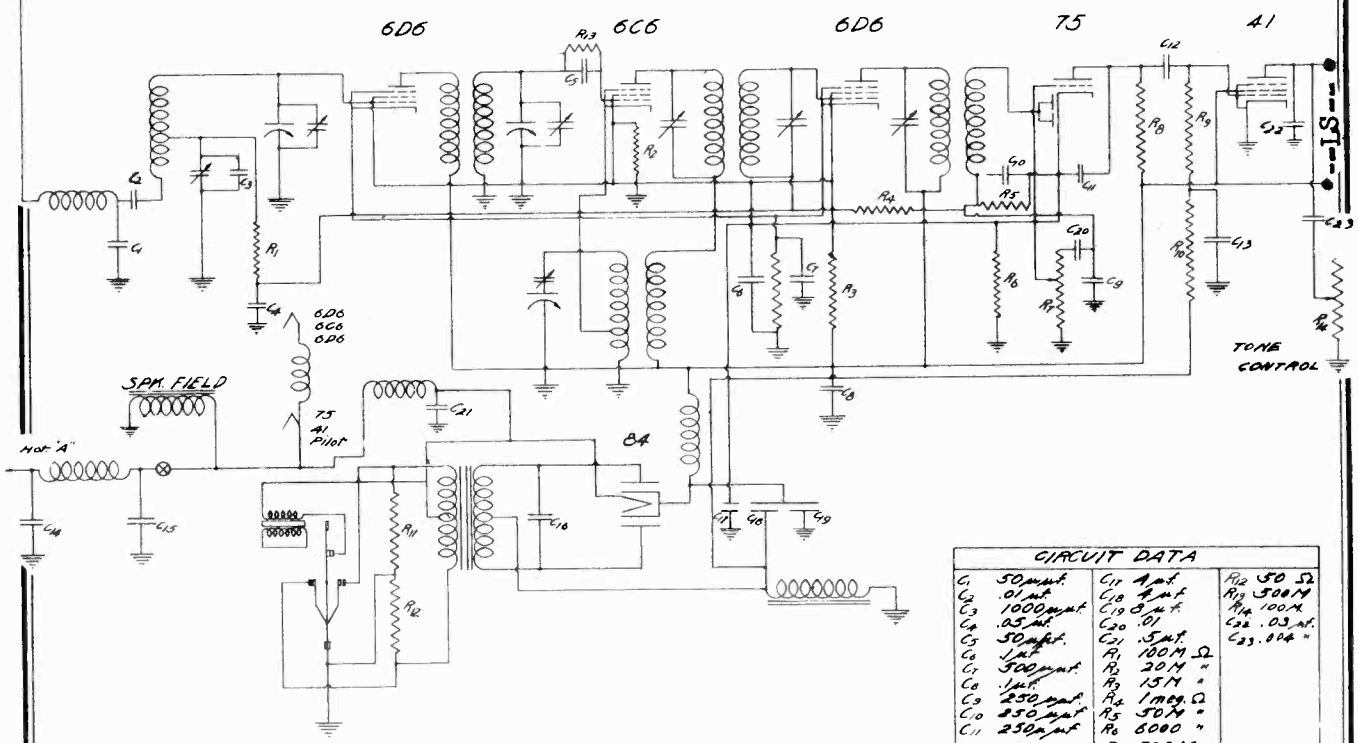
This receiver is made to cover from 1750 KC. to 535 KC., which covers the standard broadcast band and the first police band.

The receiver will operate on either alternating or direct current, from a power supply of 105 to 125 volts. Do not connect it to any other source.



MODEL 660 (early)

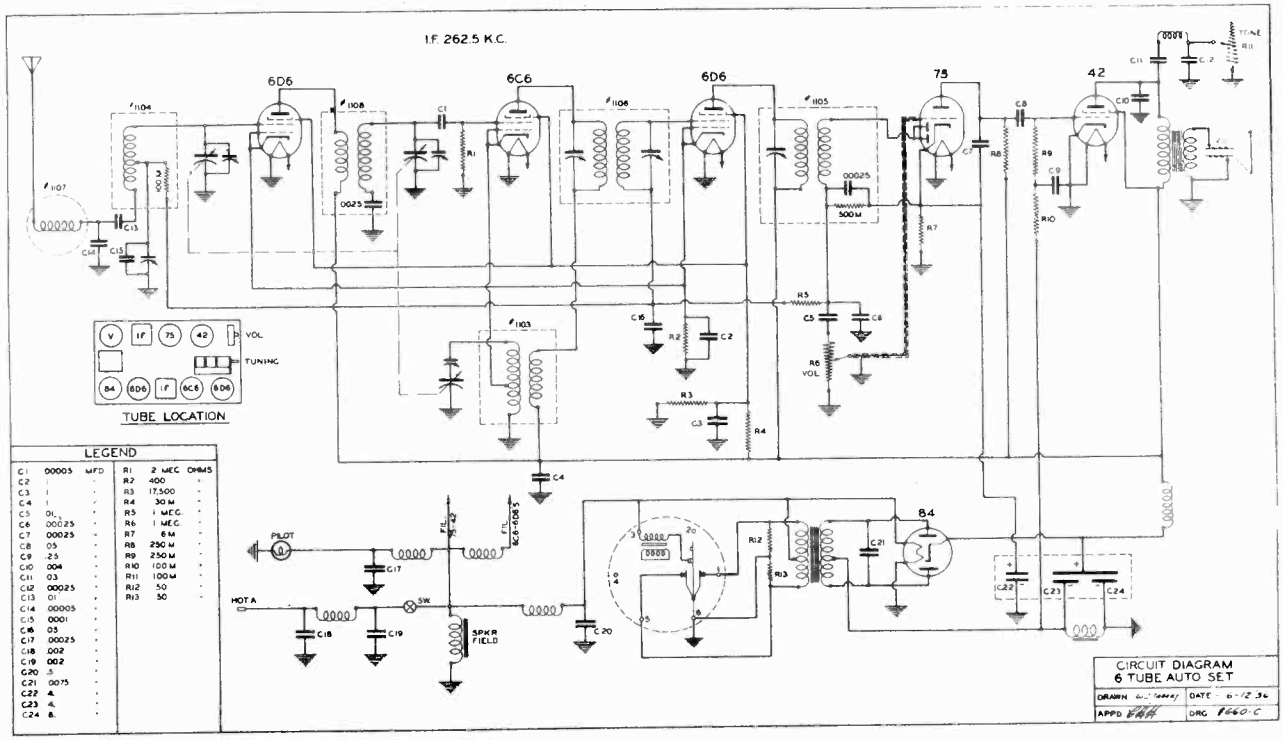
WALGREEN CO.

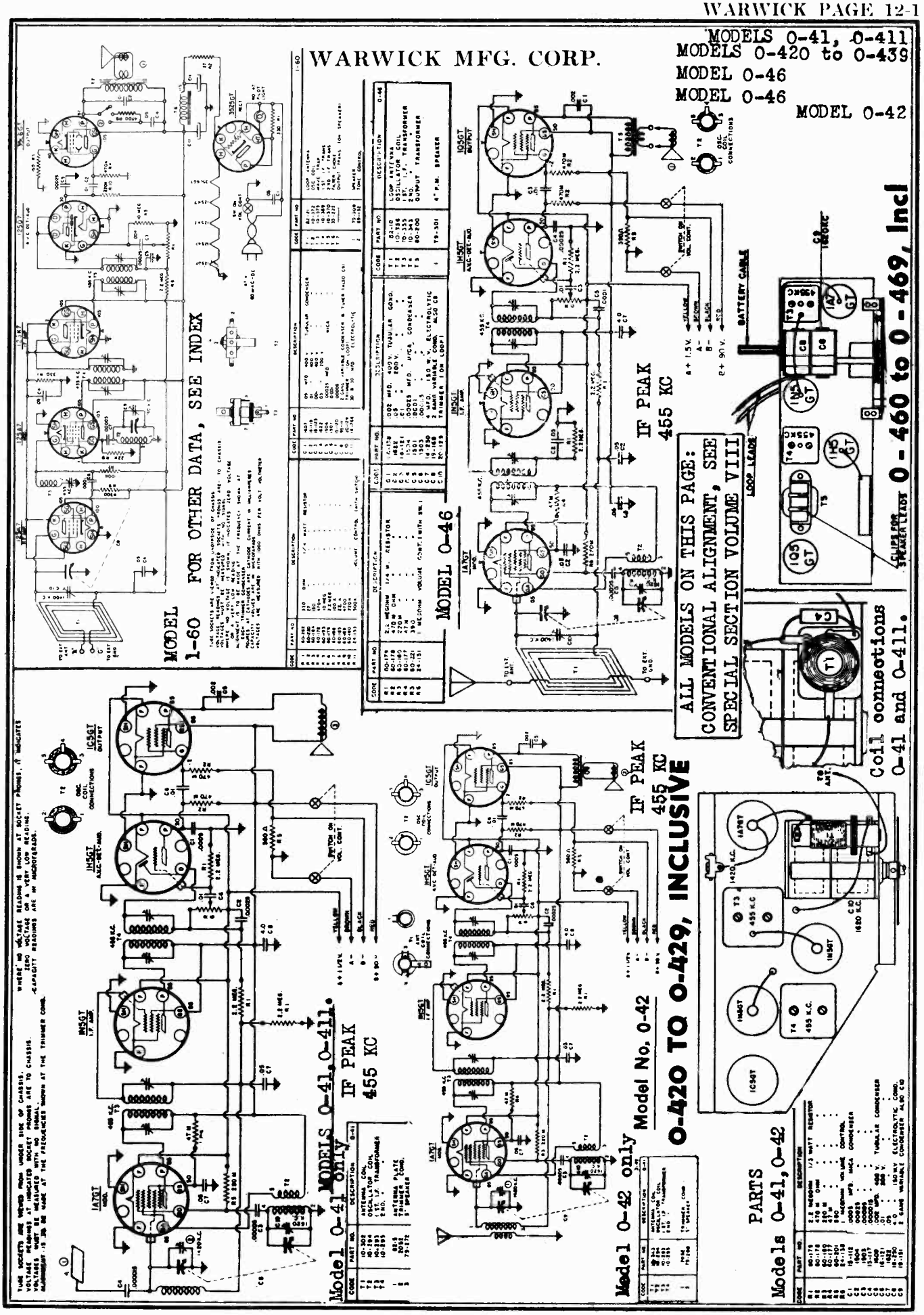


CIRCUIT DATA					
C_1	50 mmf.	C_{11}	1 mf.	R_{12}	50 Ω
C_2	.01 mf.	C_{18}	8 mf.	R_{13}	500 M
C_3	1000 mmf.	C_{19}	8 mf.	R_{14}	100 M
C_4	.05 mf.	C_{20}	.01	C_{22}	.03 mf.
C_5	50 mmf.	C_{21}	.5 mf.	C_{23}	.004 "
C_6	.1 mf.	R_1	100 M Ω		
C_7	500 mmf.	R_2	20 M "		
C_8	.1 mf.	R_3	15 M "		
C_9	250 mmf.	R_4	1 meg. Ω		
C_{10}	250 mmf.	R_5	50 M "		
C_{11}	250 mmf.	R_6	6000 "		
C_{12}	.01	R_7	500 M		
C_{13}	25 mmf.	R_8	250 M "		
C_{14}	.003 mf.	R_9	200 M "		
C_{15}	.002 mf.	R_{10}	100 M "		
C_{16}	.007 mf.	R_{11}	50 "		

6 TUBE AUTO RADIO
MODEL 660

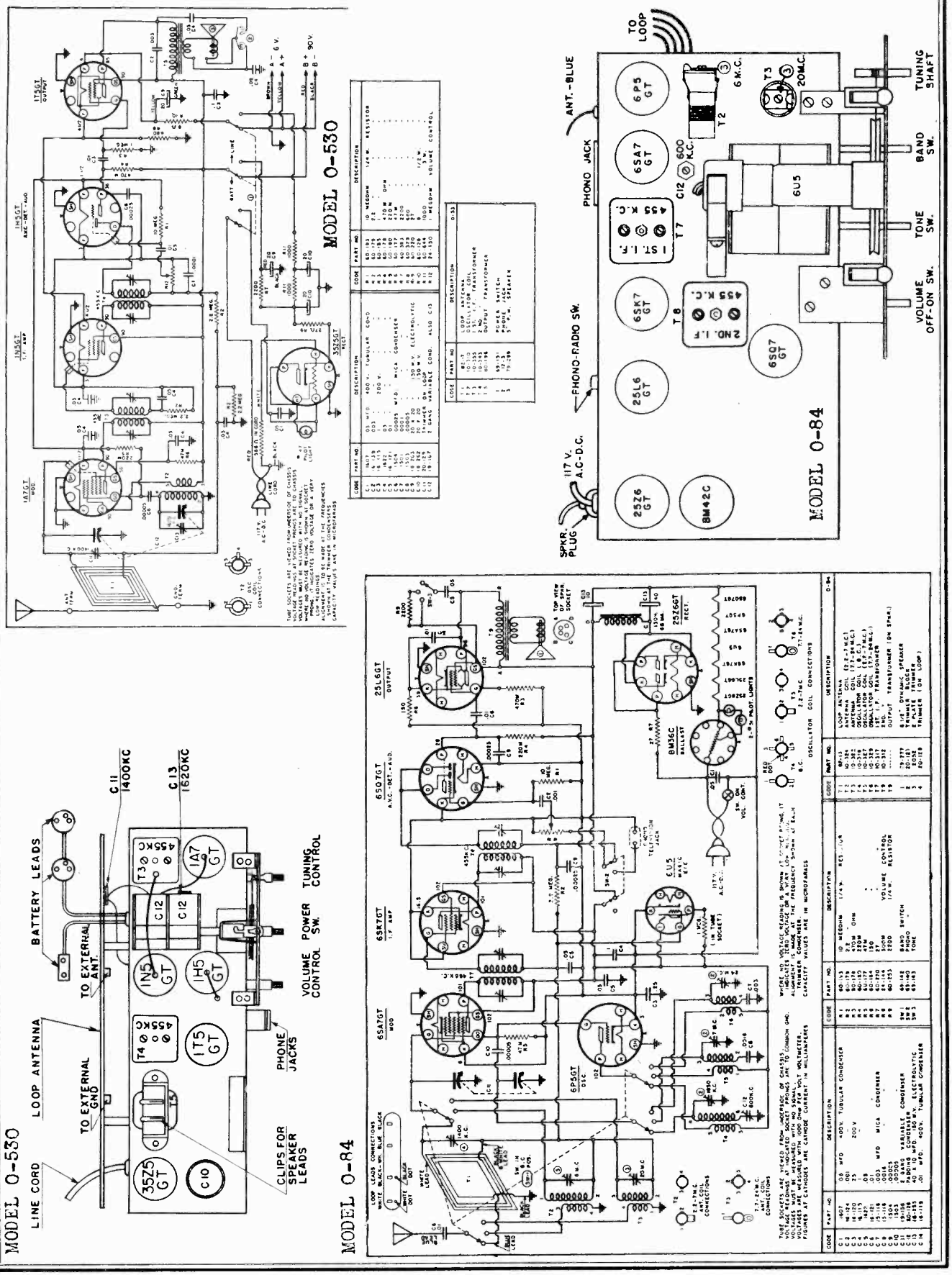
BOTH ARE
EARLY TYPES
OF MODEL 660



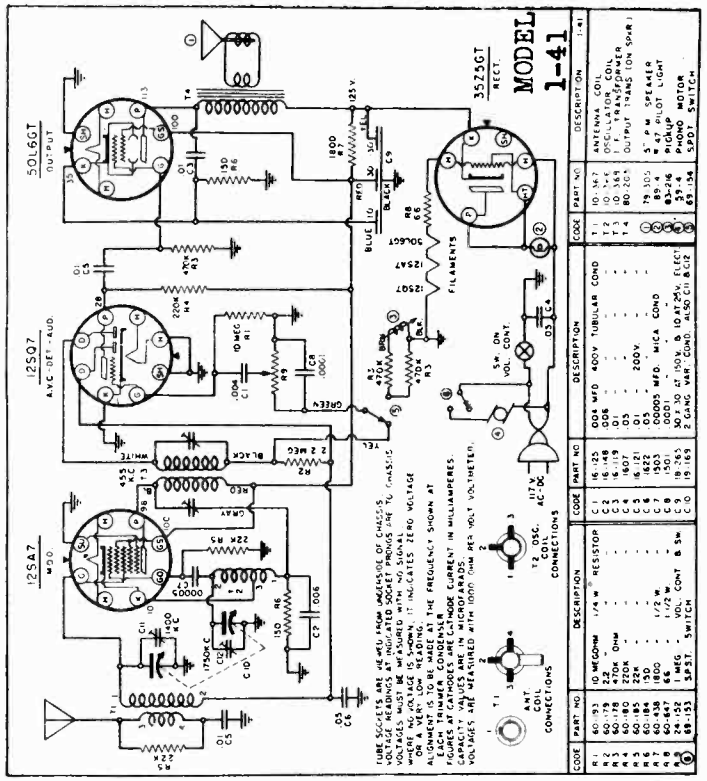


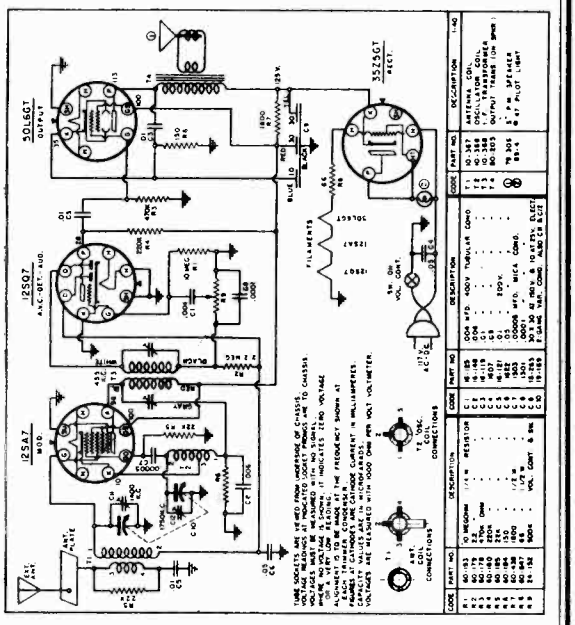
MODEL 0-84
MODEL 0-530

WARWICK MFG. CO.

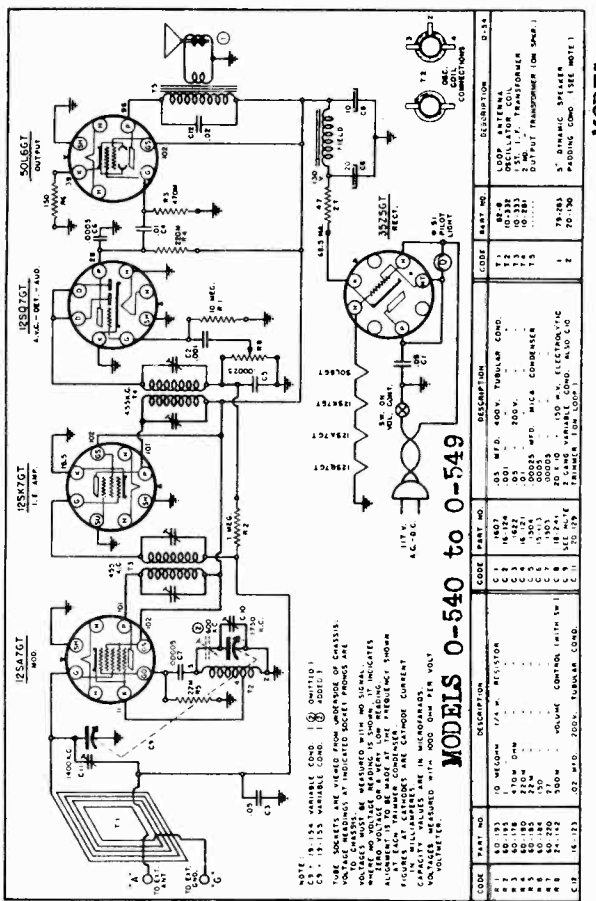


WARWICK MFG. CO. MODELS 1-40, 1-400 to 1-409
MODEL 1-41
MODELS 0-540 to 0-549

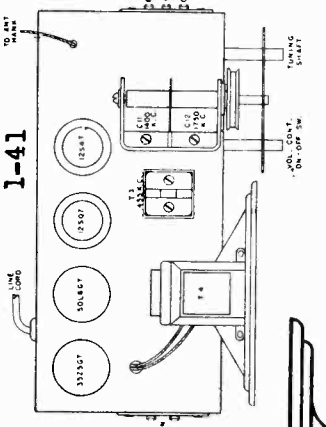




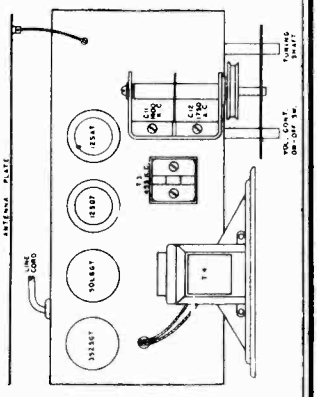
MODELS 1-40, 1-400 to 1-409



MODELS 0-540 to 0-549



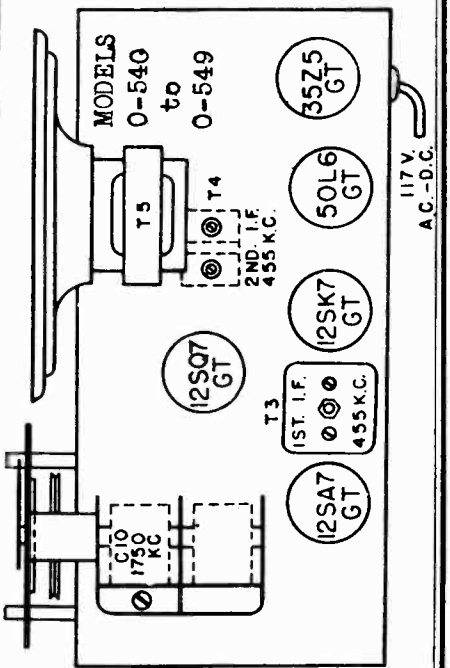
MODEL 1-41



MODELS 1-40, 1-400 to 1-409

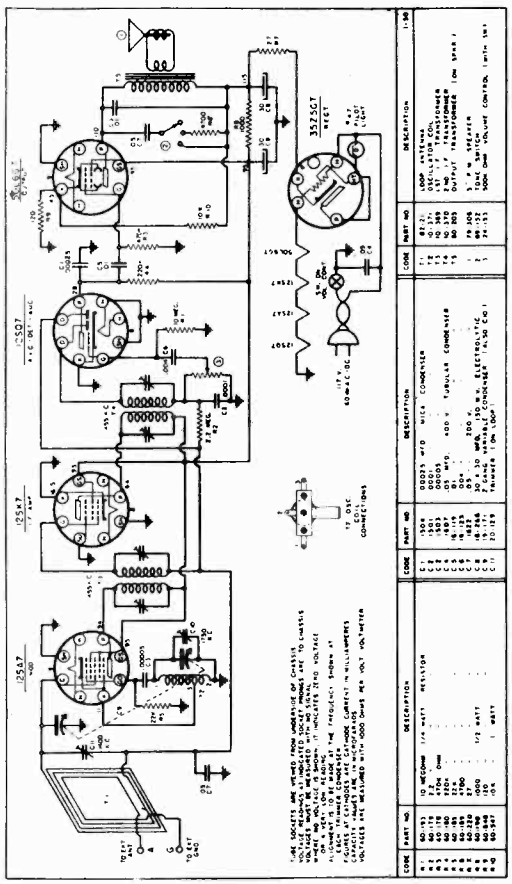
ALL MODELS:
THESE RECEIVERS COVER A
FREQUENCY RANGE FROM
540 KC TO 1750 KC.

CONVENTIONAL ALIGNMENT

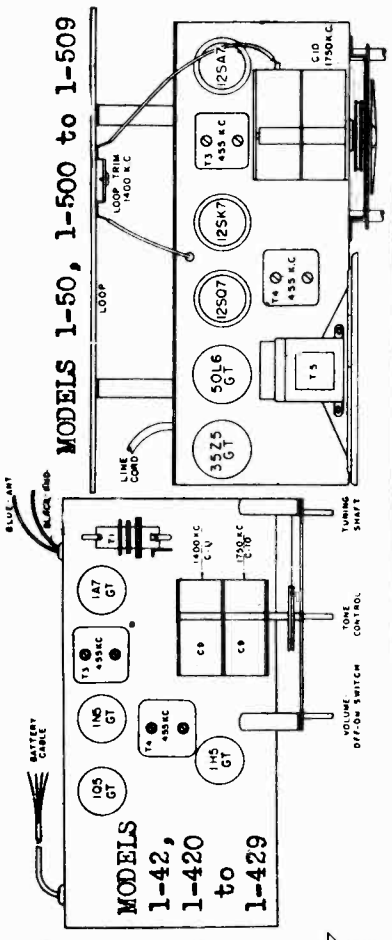


MODELS 1-42, 1-420 to 1-429
MODELS 1-50, 1-500 to 1-509
MODEL 1-52

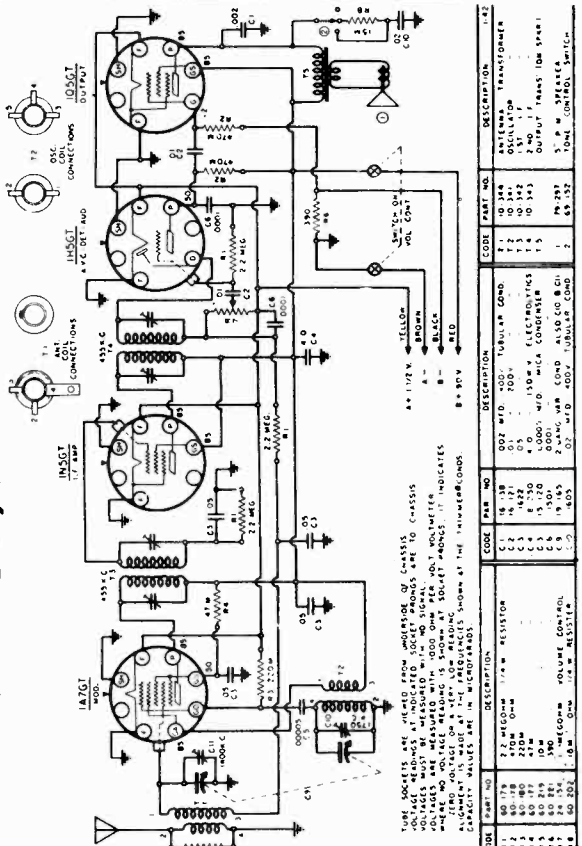
WARWICK MFG. CO.



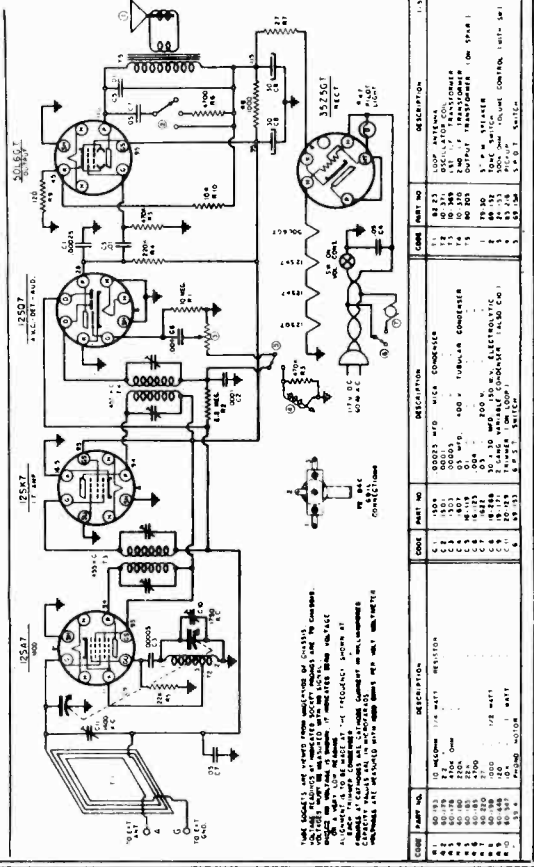
MODELS 1-50, 1-500 to 1-509



MODELS 1-42, 1-420 to 1-429

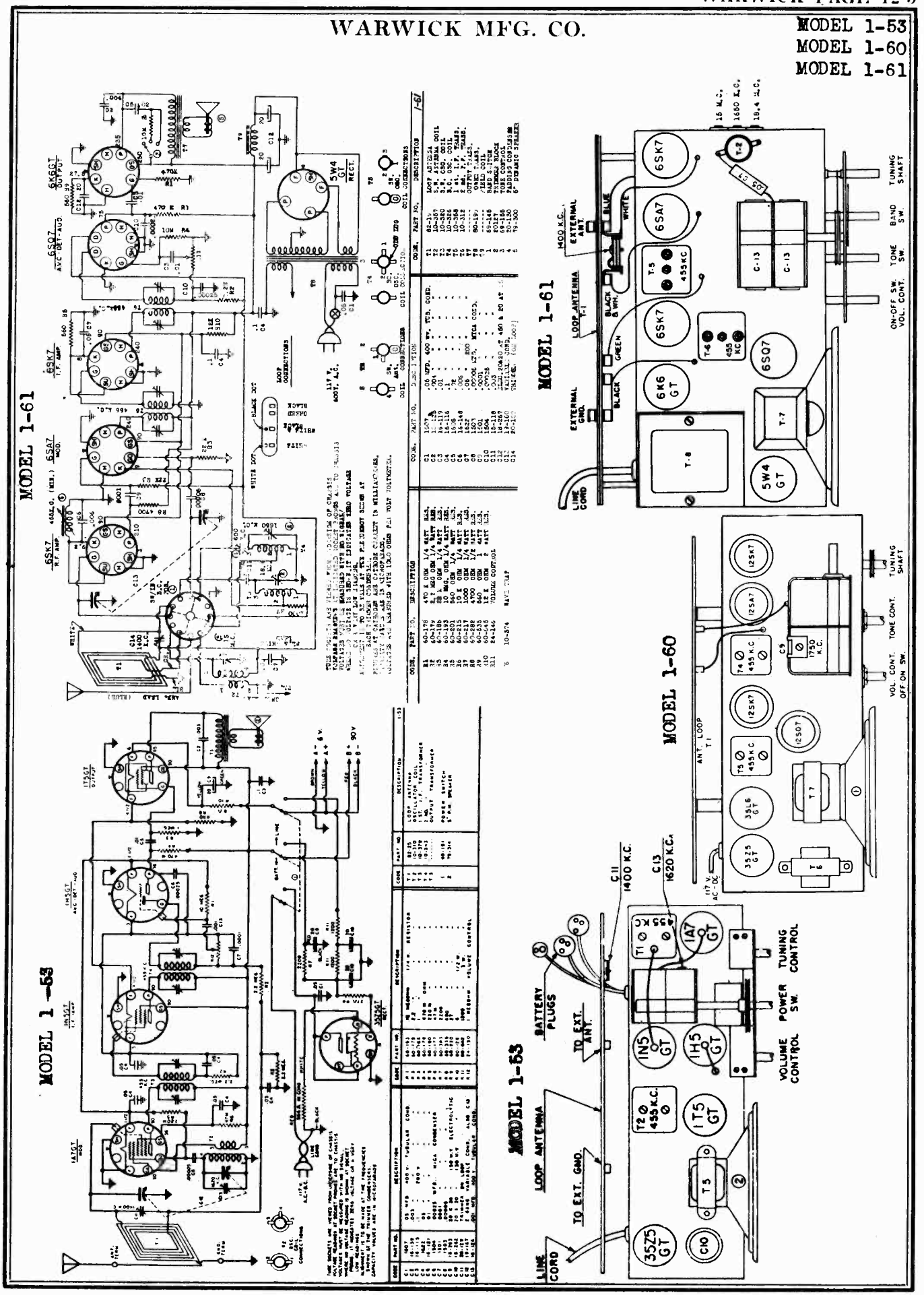


MODEL 1-52

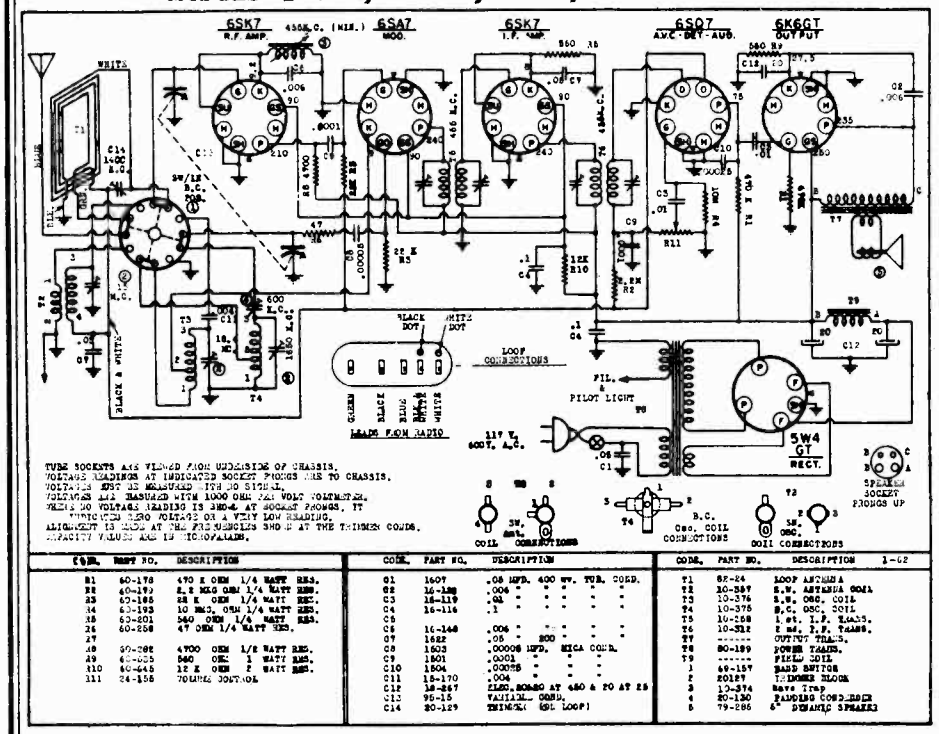


WARWICK MFG. CO.

MODEL 1-53
MODEL 1-60
MODEL 1-61



MODELS 1-621, 1-622, 9-62, 910



CODE	PART NO.	DESCRIPTION
R1	60-178	470 K OHM 1/4 WATT RES.
R2	60-193	2.2 MEG OHM 1/4 WATT RES.
R3	60-185	22 K OHM 1/4 WATT RES.
R4	60-193	10 MEG. OHM 1/4 WATT RES.
R5	60-201	560 OHM 1/4 WATT RES.
R6	60-258	47 OHM 1/4 WATT RES.
R7	60-282	4700 OHM 1/2 WATT RES.
R8	60-035	560 OHM 1 WATT RES.
R10	60-445	12 K OHM 2 WATT RES.
R11	24-158	VOLUME CONTROL

CODE	PART NO.	DESCRIPTION
C1	1607	.05 MFD. 400 WV. TUB. COND.
C2	16-138	.004 " " " " "
C3	16-119	.01 " " " " "
C4	16-116	.1 " " " " "
C5		
C6	16-148	.006 " " " " "
C7	1602	.05 " 200 " " "
C8	1603	.00008 MFD. MICA COND.
C9	1801	.0001 " " "
C10	1804	.00075 " " "
C11	15-170	.004 " " "
C12	18-867	ELEC. COMBO AT 450 & 20 AT 25
C13	95-15	VARIABL. COND.
C14	80-129	TRIMMER (OSC. LOOP)

CODE	PART NO.	DESCRIPTION 1-62
T1	62-24	LOOP ANTENNA
T2	30-367	R.F. ANTENNA COIL
T3	10-376	R.F. OSC. COIL
T4	10-375	R.F. OSC. COIL
T5	10-268	1st. I.F. TRANS.
T6	10-312	2 nd. I.F. TRANS.
T7	------	OUTPUT TRANS.
T8	80-189	POWER TRANS.
T9	------	FIELD COIL
J	49-157	BAND SWITCH
P	20127	TERMINAL BLOCK
S	13-374	Wave Trap
4	80-130	PADDING COND. BLOCK
5	79-286	6" DYNAMIC SPEAKER

MODELS 1-621, 1-622, 9-62, 910

Follow the procedure outlined below in order to adjust the push buttons properly:

1. By means of the tuning knob, tune in as accurately as possible your first desired station.

2. Lift up the button for that station and with a small screw-driver loosen set screw about two turns (counter-clockwise).

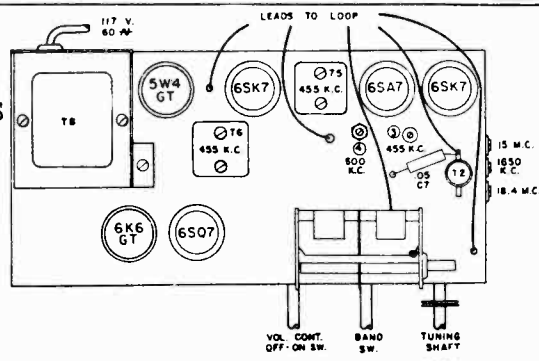
3. Push the set screw in as far as it can go with the screw-driver, and while holding the set screw in this position, make sure that your desired station is tuned in properly. It may be necessary to re-tune your station.

4. While holding set screw in as far as possible, and after your station is adjusted properly, tighten set screw firmly.

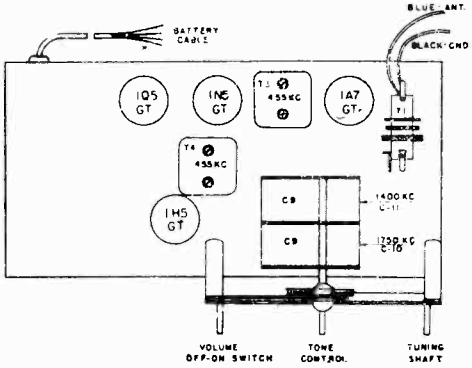
The push-button tuning system is now correctly set up for your first selected station.

Follow through with this same procedure in setting up the other three stations.

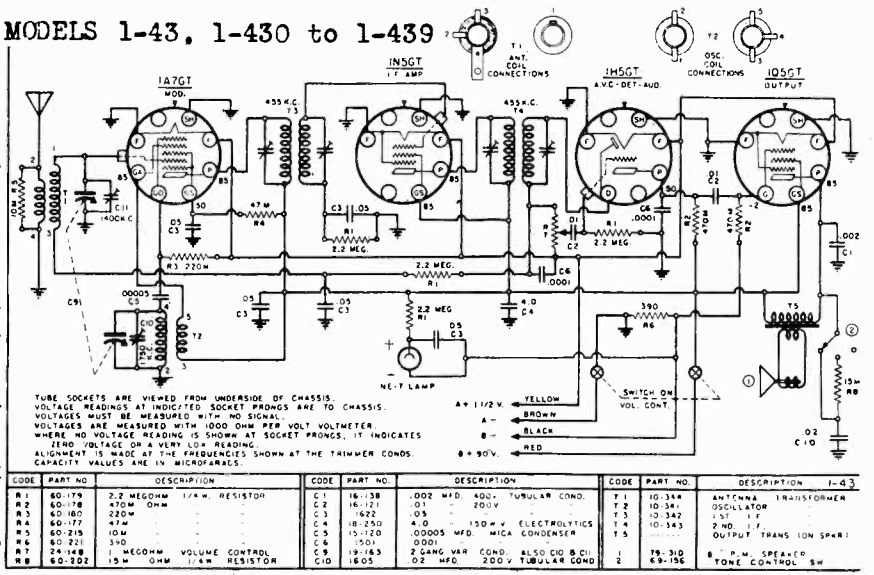
MODELS 1-621 1-622 9-62 910



MODELS 1-43 1-430 to 1-439



MODELS 1-43, 1-430 to 1-439



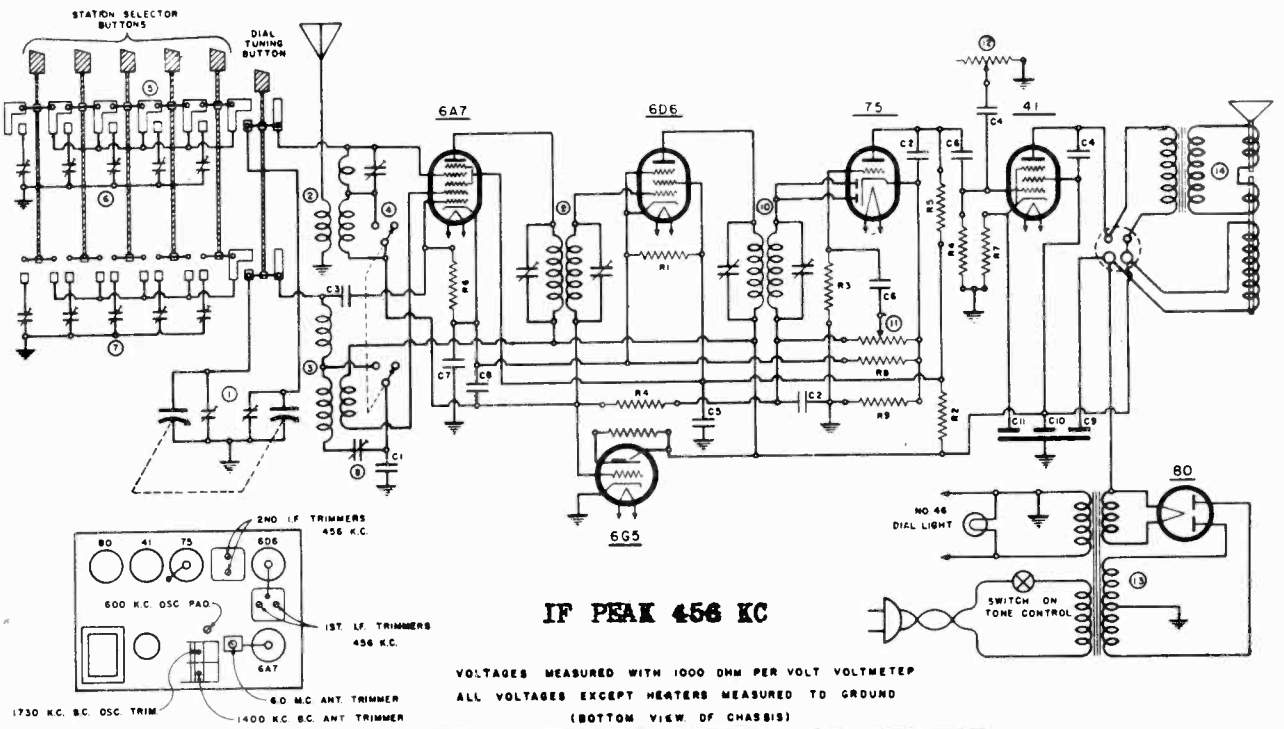
CODE	PART NO.	DESCRIPTION
R1	60-179	2.2 MEGOHM 1/4 W. RESISTOR
R2	60-178	470M OHM " "
R3	60-180	220M " "
R4	60-177	47M " "
R5	60-215	10M " "
R6	60-221	390 " "
R7	24-148	1 MEGOHM VOLUME CONTROL
R8	60-202	15 M OHM 1/4 W RESISTOR

CODE	PART NO.	DESCRIPTION
C1	16-138	.002 MFD. 400 V. TUBULAR COND.
C2	16-121	.01 " 200 V. "
C3	1622	.05 " " "
C4	18-250	4.0 " 150 W.V. ELECTROLYTICS
C5	15-120	.00005 MFD. MICA CONDENSER
C6	1601	.0001 " " "
C9	19-163	2 GANG VAR COND. ALSO C10 & C11
C10	1605	.02 MFD. 200 V. TUBULAR COND

CODE	PART NO.	DESCRIPTION 1-43
T1	10-344	ANTENNA TRANSFORMER
T2	10-341	OSCILLATOR
T3	10-342	1ST I.F.
T4	10-343	2 ND. I.F.
T5	------	OUTPUT TRANS. (ON SPKR.)
1	79-310	8" P.M. SPEAKER
2	69-156	TONE CONTROL SW.

WARWICK MFG. CO.

MODEL WS-645



IF PEAK 456 KC

VOLTAGES MEASURED WITH 1000 OHM PER VOLT VOLTMETER
ALL VOLTAGES EXCEPT HEATERS MEASURED TO GROUND
(BOTTOM VIEW OF CHASSIS)

PART NO.		DESCRIPTION					
R1	6117	25,000	OHM	1/2 W	CARBON	RES.	
R2	6105	10,000	"	"	"	"	
R3	6017	1 MEG.	"	1/3 W	"	"	
R4	6018	500,000	"	"	"	"	
R5	6036	200,000	"	"	"	"	
R6	6028	40,000	"	"	"	"	
R7	6052	800	"	"	"	"	
R8	60-151	160	"	"	"	"	10%
R9	60-150	51	"	"	"	"	10%

PART NO.		DESCRIPTION					
C1	15-101	.00148	MFD.	MICA	CONDENSER		5%
C2	1504	.00025	"	"	"		"
C3	1501	.0001	"	"	"		"
C4	1651	.004	"	600 V.	TUBULAR	COND.	
C5	1607	.05	"	400 V.	"	"	
C6	1603	.01	"	"	"	"	
C7	1614	.25	"	200 V.	"	"	
C8	1622	.05	"	"	"	"	
C9	18-102	8	"	250 V.	WET	ELECTROLYTIC	
C10	"	4	"	"	"	"	
C11	"	4	"	25 V.	"	"	

PART NO.		DESCRIPTION	645
1	19-113	2 GANG CONDENSER	
2	10-196	ANTENNA COIL	
3	10-147	OSCILLATOR COIL	
4	69-108	WAVE SWITCH	
5	69-115	6 BUTTON PUSH-BUTTON SWITCH	
6	20-106	ANT. TRIMMER STRIP	
7	20-107	OSC. " "	
8	20-100	B.C. OSC. PADDING TRIMMER	
9	10-194	1ST I.F. TRANSFORMER	
10	10-195	2ND. I.F. " "	
11	24-105	VOLUME CONTROL	
12	26-106	TONE CONTROL WITH SWITCH	
13	80-104	POWER TRANSFORMER	
14		SPEAKER	

FOR TUNER. SEE INDEX

All alignments must be made with the volume control turned full on and with the signal input from the generator reduced to as low a value as possible while still giving a sufficient output to be easily read on the output meter.

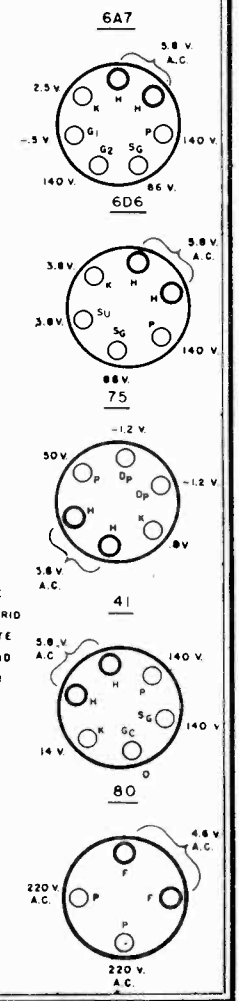
Connect the output meter, through a .5 M.F. condenser and a resistance of such a value as to make the total meter resistance approximately 7000 ohms, to the two small pins of the speaker plug. The output meter remains connected during the entire alignment procedure.

Connect the signal generator to the grid cap of the 6A7 tube through a .1 M.F. condenser. Connect the ground of the generator to the ground lead of the receiver. With the wave switch on broadcast position and the dial set to about 1000 K.C., feed in a 456 K.C. signal. Adjust the trimmers on top of the first and second I.F. transformers until the maximum output is obtained. This aligns the I.F.

Leaving the wave switch on broadcast position turn the dial to the extreme high frequency end. Feed a 1730 K.C. signal to the receiver antenna lead through a .00025 M.F. mica condenser. Adjust the 1730 K.C. broadcast oscillator trimmer until maximum output is shown. Set the generator to 1400 K.C. and tune in this signal on the receiver. Then adjust the 1400 K.C. broadcast antenna trimmer to maximum output. Set the generator to 600 K.C. and adjust the 600 K.C. broadcast oscillator pad to maximum output **while tuning the receiver back and forth across the signal** from the generator. This completes the alignment of the broadcast band.

The short wave band is aligned while feeding a 6.0 M.C. signal to the receiver antenna lead through a .00025 M.F. mica condenser. Turn the wave switch to short wave position and tune in the 6.0 M.C. signal. Adjust the 6.0 M.C. short wave trimmer to maximum output.

VOLTAGE DIAGRAM



F - FILAMENT
H - HEATER
P - PLATE
K - CATHODE
G1 - OSC GRID
G2 - OSC PLATE
Gc - CONTROL GRID
Dp - DIODE PLATE
Sg - SCREEN GRID
Su - SUPPRESSOR

INSTAMATIC TUNING

The purpose of **Instamatic** tuning is to give the user instant, automatic tuning of any one of a selection of favorite broadcast stations. The control buttons are conveniently located just below the tuning dial. Pushing in any button will release any other button which happens to be already in. After the **Instamatic** tuning feature has been properly adjusted, this will instantly and automatically tune in the station selected by this button.

Before attempting to adjust or use **Instamatic** tuning, the "Installation" and "Operation" instructions must be carefully followed. When the receiver is operating satisfactorily using the tuning dial with the "Dial Tuning" button pressed in, the **Instamatic** feature may be easily adjusted by carefully following these instructions.

Located on the back of the chassis is a row of five pair of small bakelite adjustment knobs. Each pair of these knobs controls the tuning of the station for the **Instamatic** button which is in the same relative position.

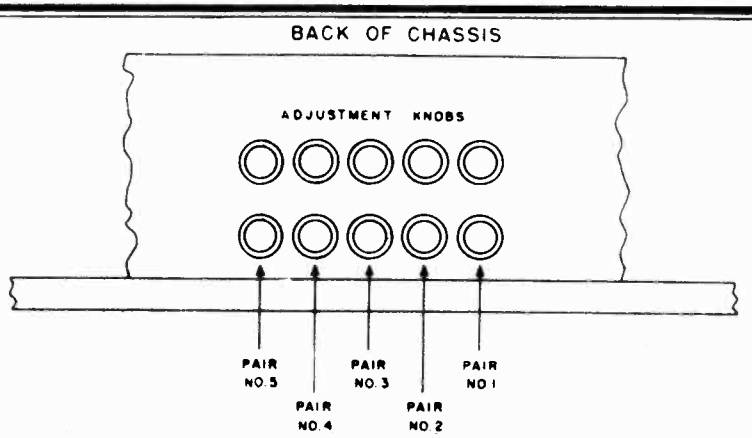
With the receiver operating with the "Dial Tuning" button in and the wave switch on broadcast position, turn the tuning knob to the left until the 540 KC end of the band has been reached. Then turn the tuning knob to the right until a station, for which it it desired to have **Instamatic** tuning, is heard. Press in the Button No. 1. This is the button at the left hand end of the row. Reach around to the back of the receiver and turn upper knob of the Pair No. 1 until the same program is heard. Unless the wrong knob is being turned, several different stations will be heard during this procedure. If necessary to check that the same program is now tuned in, the "Dial Tuning" button may again be pressed. In this way it can be determined that the same station is tuned in with the **Instamatic** button as when the "Dial Tuning" button is in. If it is not the same station the adjustment knob should be turned again and these operations repeated until the same program is heard when either of these two buttons is pressed.

The bottom adjustment knob of the first pair is now turned until the station is heard the best. Both top and bottom knobs may then be adjusted to exact tuning by watching the magic eye and adjusting until the two edges of the green section are as close together as it is possible to get them.

The first **Instamatic** button is now properly adjusted for the station which was tuned in on the dial and the station's call letters may be pushed out of the station list, moistened on the back, and pressed into the hollow end of the button.

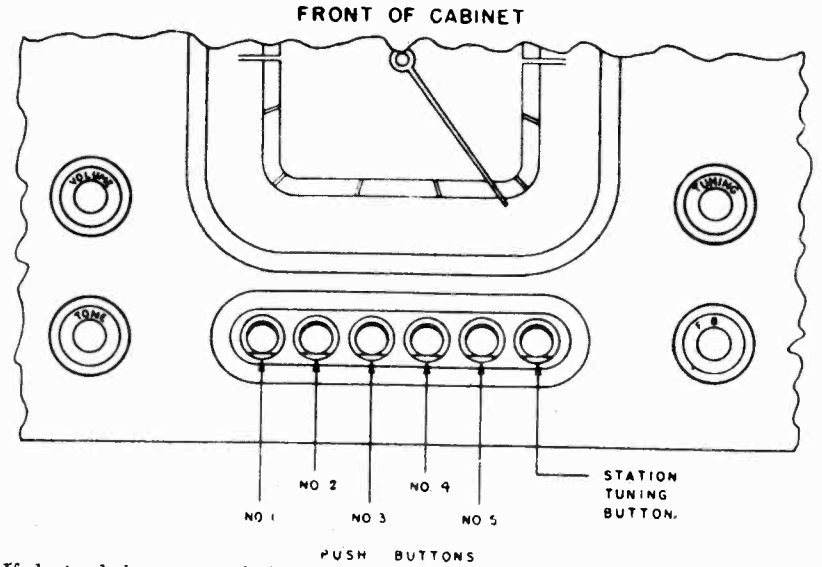
With the "Dial Tuning" button pressed in, the tuning knob is again turned to the right until the next station for which **Instamatic** tuning is wanted, is tuned in. The adjustment process for this station is the same as before, except that Button No. 2 and Pair No. 2 adjustment knobs are used. Proceeding in this way all five of the buttons may be properly adjusted for the stations desired.

It must be remembered that the "Dial Tuning" button must be pressed in whenever it is desired to tune in stations with the tuning knob, regardless of which wave band is in use. It must also be remembered that the wave switch must be in the broadcast position when **Instamatic** tuning is being used.



The approximate frequency coverage of each of the "**Instamatic**" control buttons is as follows:

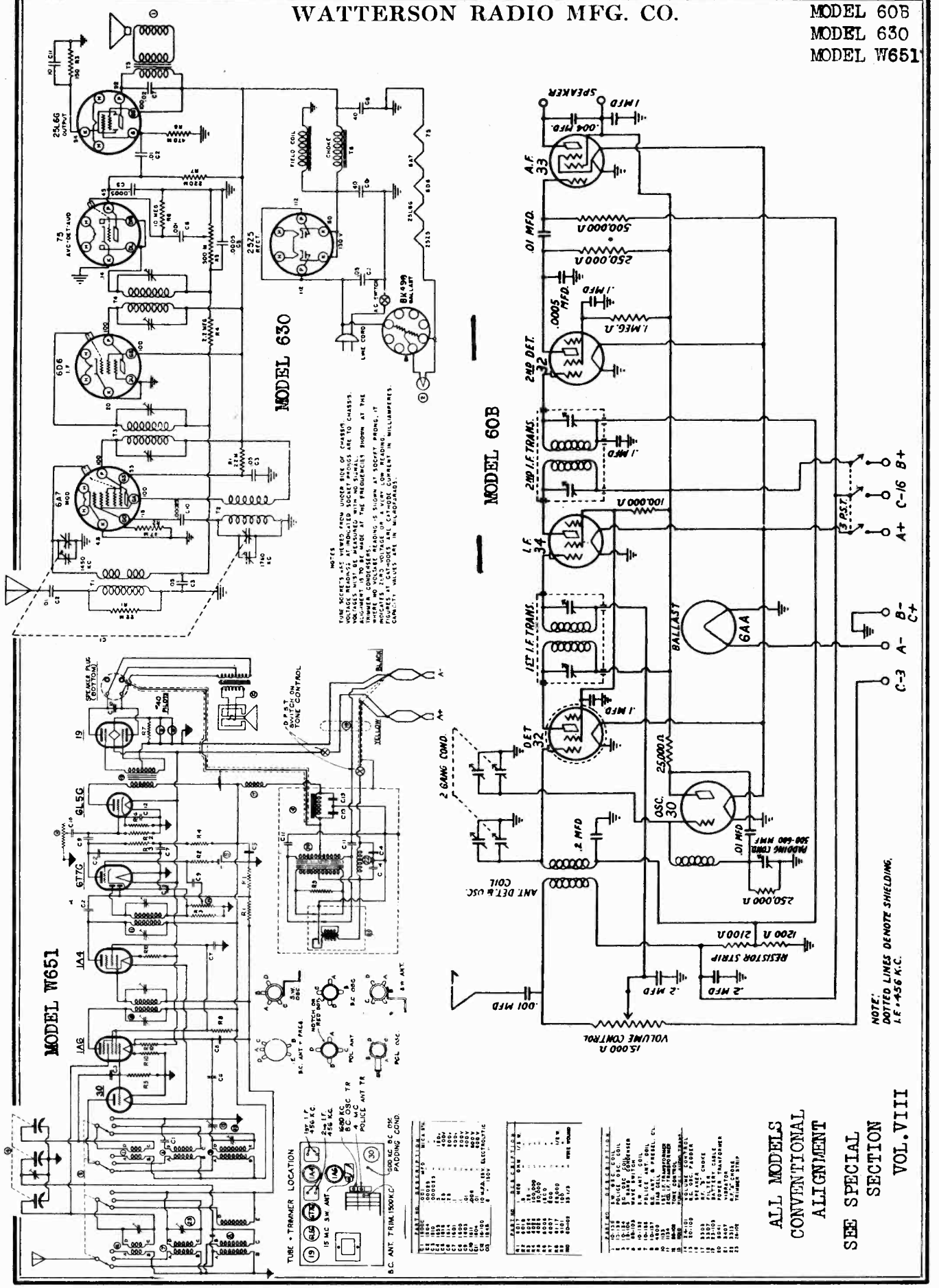
1—Stations between 540 and 1000 Kc
2 Stations between 540 and 1000 KC
3 Stations between 750 and 1200 KC
4 Stations between 750 and 1200 KC
5 Stations between 1000 and 1500 KC



If desired the tuning dial may be left set to a station which is not set up on one of the buttons. The "Dial Tuning" button will then tune in this station when it is pressed. This will give an extra **Instamatic** tuned station, making a total of six different stations which can be instantly tuned in by simply pressing a button.

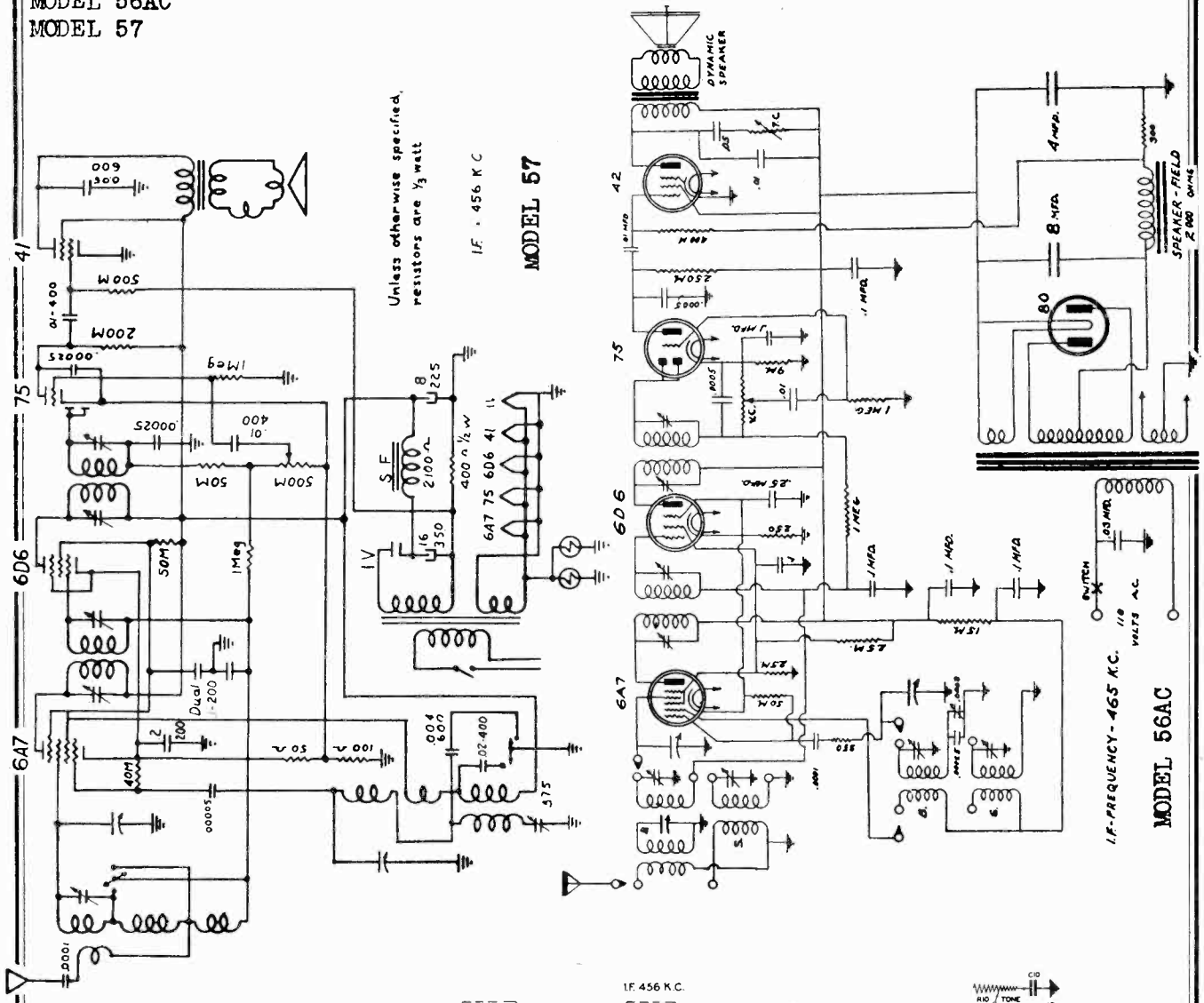
WATTERSON RADIO MFG. CO.

MODEL 60B
MODEL 630
MODEL W651



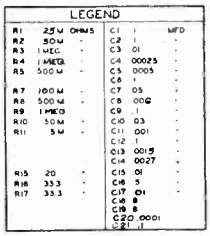
MODEL 6V-600W
MODEL 56AC
MODEL 57

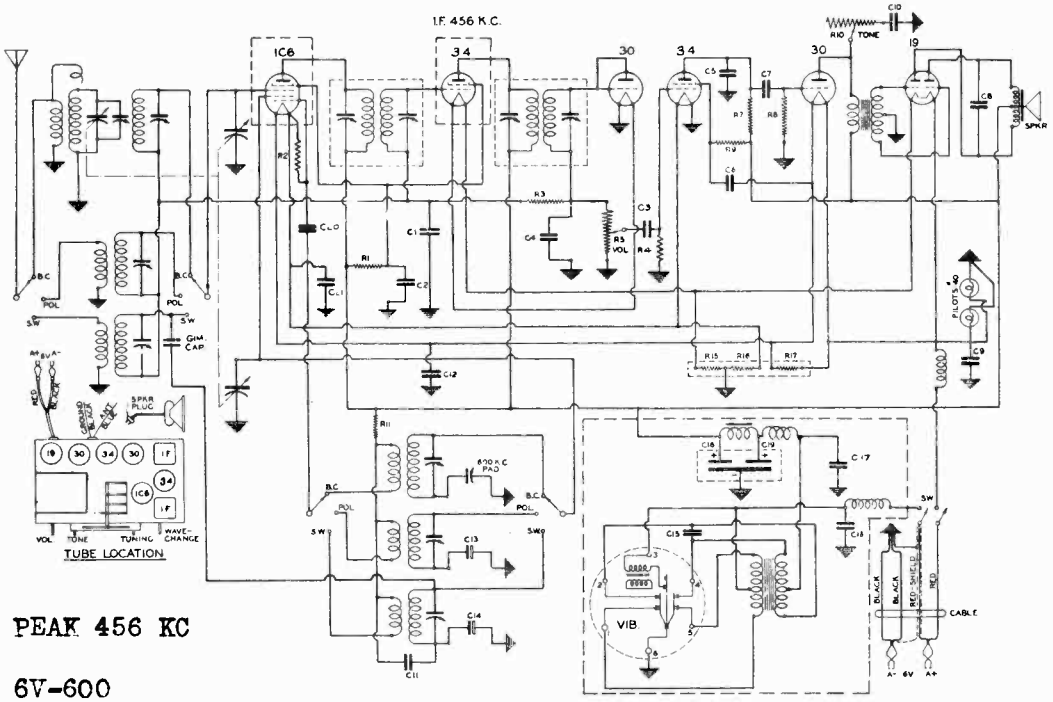
WATTERSON RADIO MFG. CO.



ALL MODELS
CONVENTIONAL
ALIGNMENT

SEE
SPECIAL
SECTION
VOL. VIII





I.F. PEAK 456 KC

MODEL 6V-600

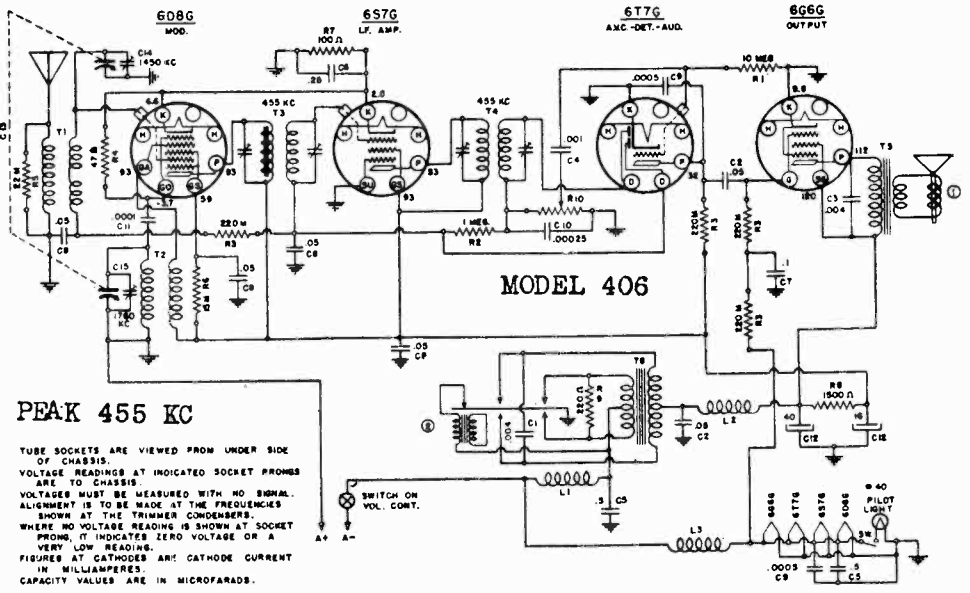
WATTERSON RADIO MFG. CO.

MODEL 79
MODEL 406
MODEL 669

CODE	PART NO	DESCRIPTION
C1	16-187	.004 MFD. 1000 V. BUFFER COND
C2	1607	.05 " 400 V. TUB. CONDENSER
C3	16-125	.004 " " " "
C4	16-124	.001 " " " "
C5	16-112	.5 " 200 V. " "
C6	16-120	.25 " " " "
C7	16-113	.1 " " " "
C8	1622	.05 " " " "
C9	15-112	.0005 " MICA CONDENSER
C10	1504	.00025 " " "
C11	1501	.0001 " " "
C12	19-238	40 X 16 MFD. ELECTROLYTIC
C13	19-132	2 GANG VARIABLE CONDENSER C14 & C15

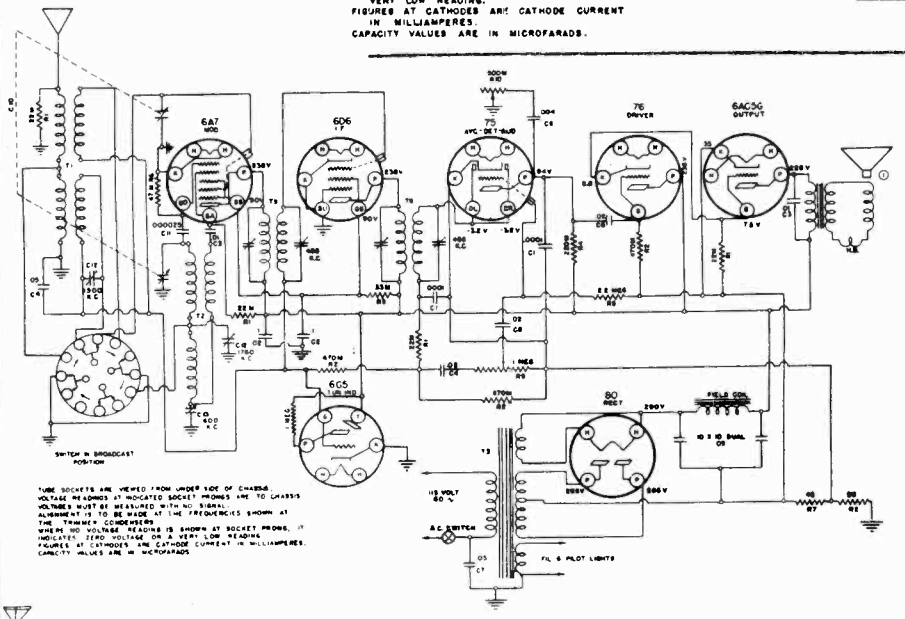
CODE	PART NO.	DESCRIPTION
R1	60-193	10 MEGOHM 1/3 W. RESISTOR
R2	60-195	1 " " "
R3	60-180	220 M OHM " "
R4	60-177	47 M " " "
R5	60-185	22 M " " "
R6	60-202	15 M " " "
R7	60-197	100 " " "
R8	60-203	1500 " 1/2 W "
R9	60-199	220 " " "
R10	24-124	VOLUME CONTROL 500M Ω

CODE	PART NO.	DESCRIPTION 406
T1	10-238	ANTENNA TRANSFORMER
T2	10-240	OSCILLATOR "
T3	10-253	1ST I.F. "
T4	10-252	2 ND. I.F. "
T5		OUTPUT TRANS. (ON SPKR.)
T6	80-160	VIBRATOR TRANSFORMER
L1	33-217	VIBRATOR CHOKE
L2	10-246	R.F. "
L3	33-218	FILAMENT "
I	79-256	SPEAKER 5" P.M.
2	34-103	VIBRATOR



IF PEAK 455 KC

TUBE SOCKETS ARE VIEWED FROM UNDER SIDE OF CHASSIS.
VOLTAGE READINGS AT INDICATED SOCKET PRONGS ARE TO CHASSIS.
VOLTAGES MUST BE MEASURED WITH NO SIGNAL.
ALIGNMENT IS TO BE MADE AT THE FREQUENCIES SHOWN AT THE TRIMMER CONDENSERS.
WHERE NO VOLTAGE READING IS SHOWN AT SOCKET PRONG, IT INDICATES ZERO VOLTAGE OR A VERY LOW READING.
FIGURES AT CATHODES ARE CATHODE CURRENT IN MILLIAMPERES.
CAPACITY VALUES ARE IN MICROFARADS.



TUBE SOCKETS ARE VIEWED FROM UNDER SIDE OF CHASSIS.
VOLTAGE READINGS AT INDICATED SOCKET PRONGS ARE TO CHASSIS.
VOLTMETER MUST BE MEASURED WITH NO SIGNAL.
ALIGNMENT IS TO BE MADE AT THE FREQUENCIES SHOWN AT THE TRIMMER CONDENSERS.
WHERE NO VOLTAGE READING IS SHOWN AT SOCKET PRONGS, IT INDICATES ZERO VOLTAGE OR A VERY LOW READING.
FIGURES AT CATHODES ARE CATHODE CURRENT IN MILLIAMPERES.
CAPACITY VALUES ARE IN MICROFARADS.

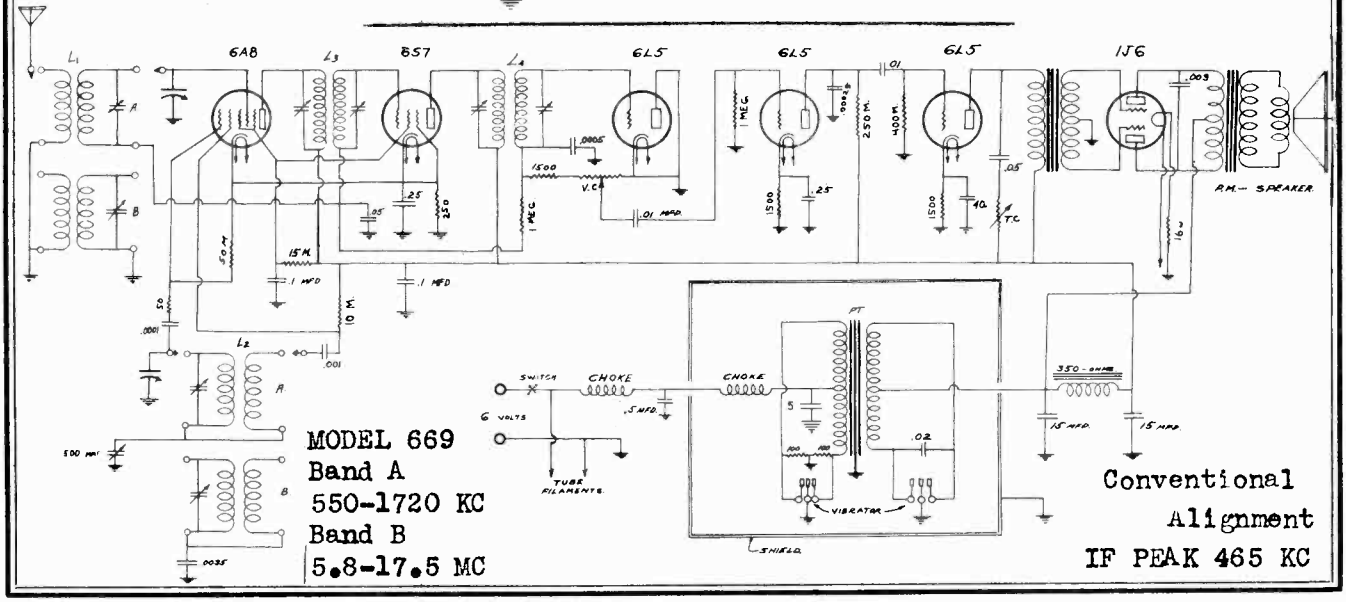
CODE	PART NO	DESCRIPTION
R1	60-185	22 M OHM 1/3 WATT RESISTOR
R2	60-176	470M " " "
R3	60-186	33M " " "
R4	60-180	220M " " "
R5	60-182	2.2 MEGOHM 1/3 WATT RESISTOR
R6	60-177	47 M OHM 1/3 WATT RESISTOR
R7	60-197	100M " 1/2 " "
R8	60-199	220 " " "
R9	24-173	1 MEGOHM VOLUME CONTROL & SW
R10	24-116	5000M OHM TONE CONTROL

CODE	PART NO	DESCRIPTION
C1	1501	100 MMF MICA CONDENSER
C2	16-106	1 MFD 400 V. TUBULAR CONDENSER
C3	1504	.00025 " " "
C4	1602	.05 " 200 V. "
C5	1631	.004 MFD 600 V. "
C6	16-108	.02 " " "
C7	1607	.05 " 400 V. "
C8	16-113	.02 " 200 V. "
C9	19-173	40 X 10 MFD 450 W. ELECTROLYTIC CONDENSER
C10	19-133	2 GANG VARIABLE CONDENSER

CODE	PART NO	DESCRIPTION
C11	1510	25 MMF MICA CONDENSER
C12	1503	TRIMMERS 5-30 MMFD
C13	20-117	PADDING CONDENSER 500-600 MMFD
T1	10-237	ANTENNA COIL
T2	10-238	OSCILLATOR COIL
T3	10-239	1ST I.F. TRANSFORMER
T4	10-229	2ND I.F. "
I	79-243	SPEAKER

MODEL 79

IF PEAK 455 KC

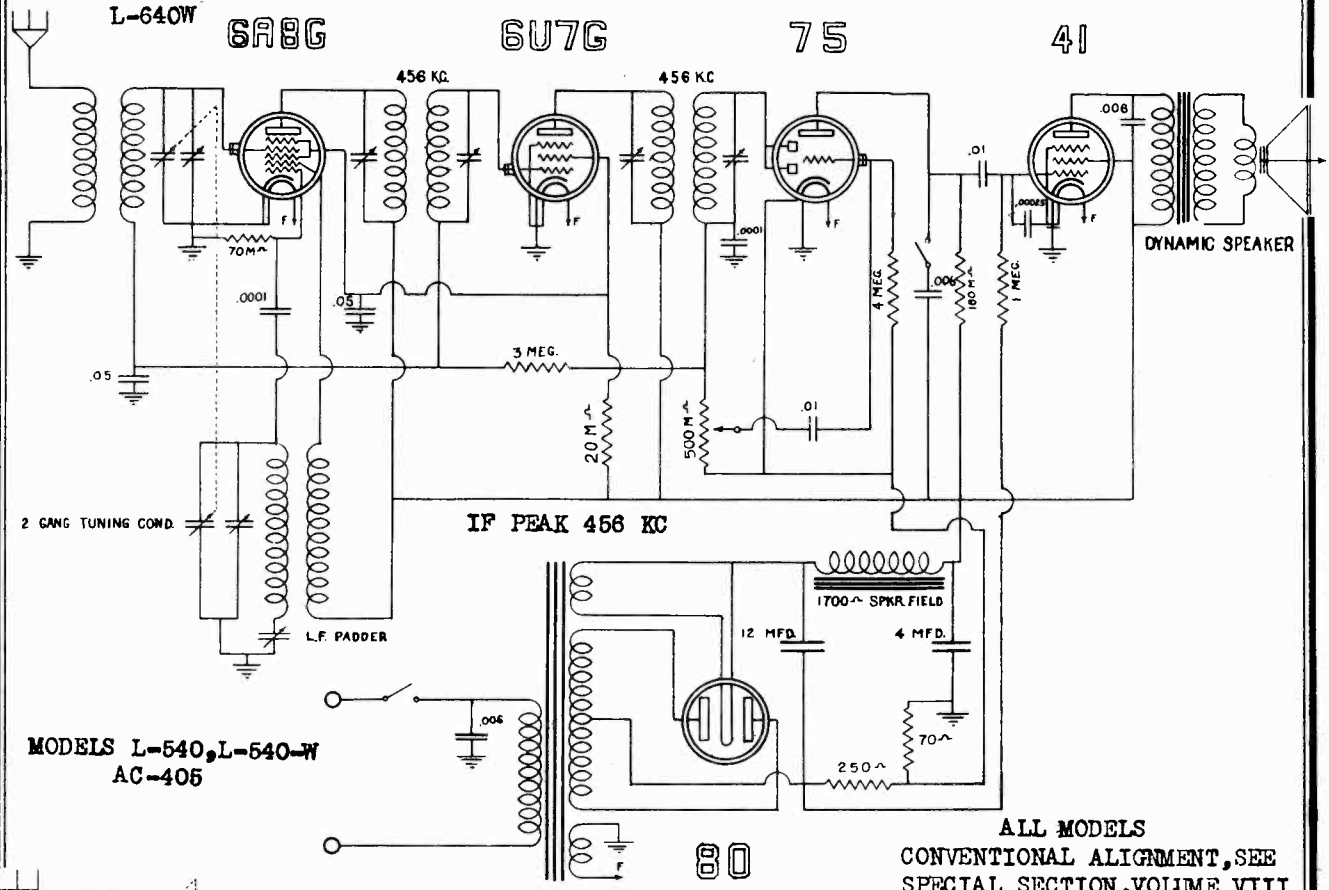


MODEL 669
Band A
550-1720 KC
Band B
5.8-17.5 MC

Conventional Alignment
IF PEAK 465 KC

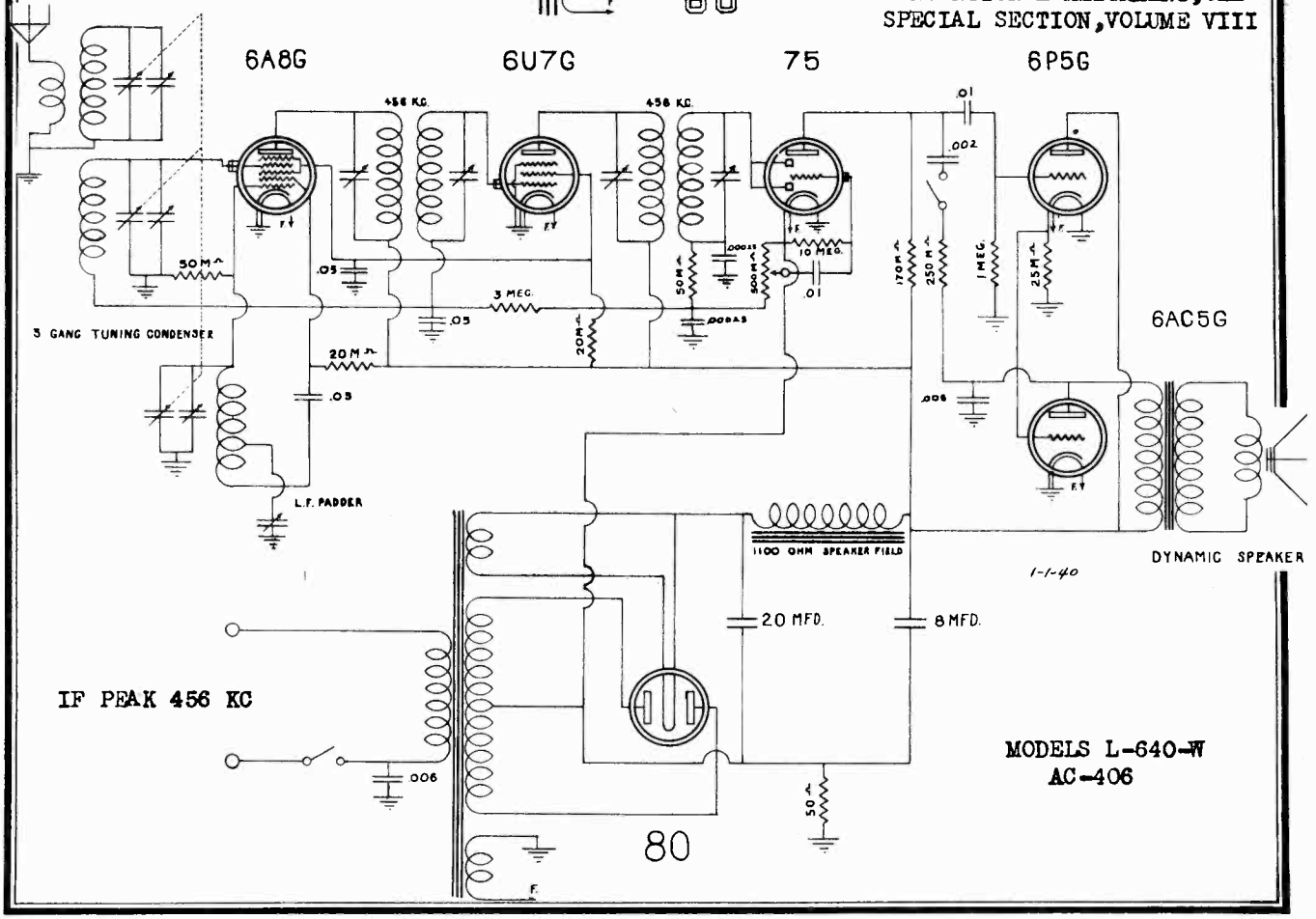
MODELS AC-405,
L-540,L-540-W
MODELS AC-406,L-640-W
L-640W

WATTERSON RADIO MFG. CO.



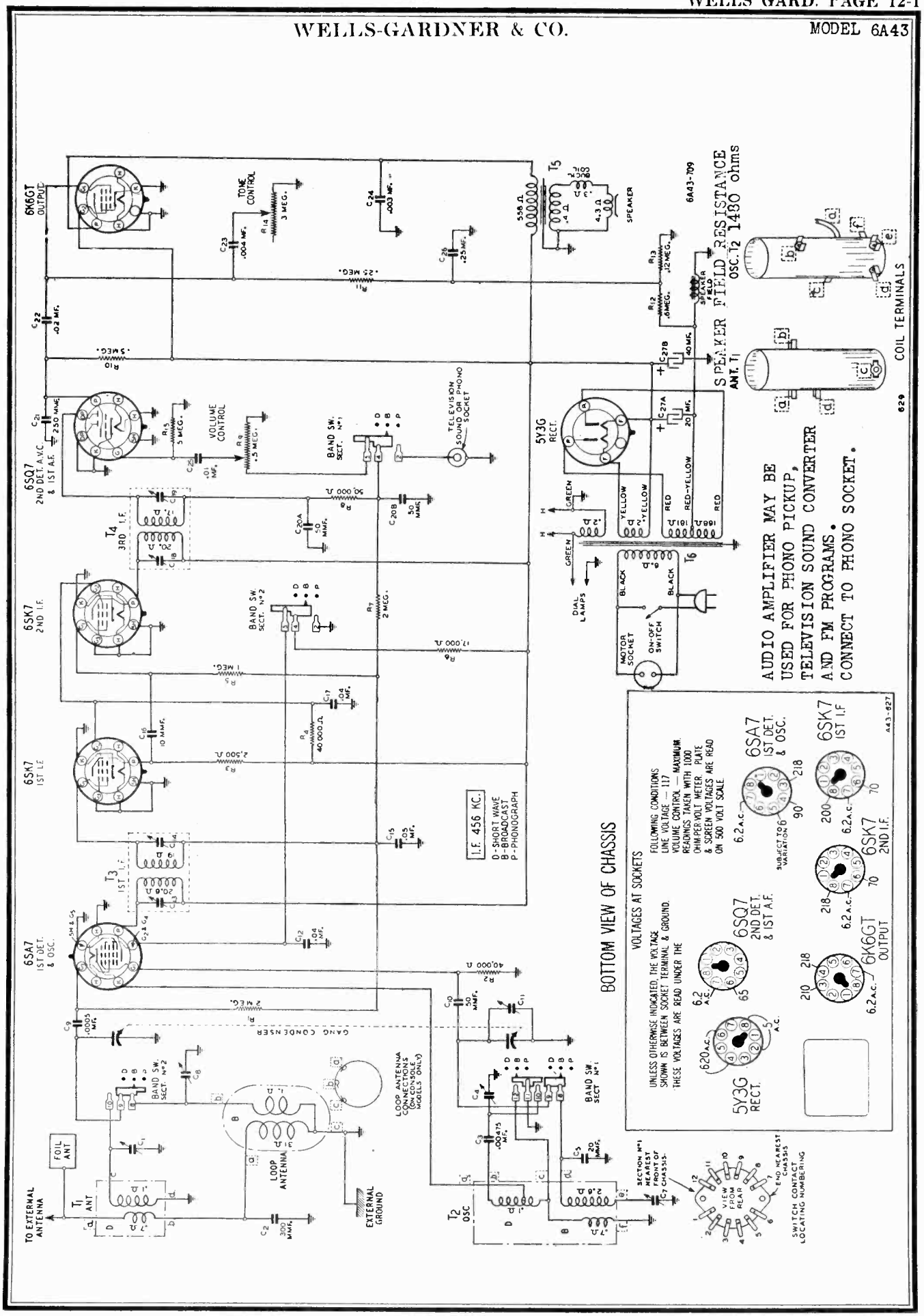
MODELS L-540,L-540-W
AC-405

ALL MODELS
CONVENTIONAL ALIGNMENT,SEE
SPECIAL SECTION,VOLUME VIII



MODELS L-640-W
AC-406

WELLS-GARDNER & CO. MODEL 6A43



MODEL 6A43 WELLS-GARDNER & CO.

SPECIFICATIONS

Power Consumption 57 Watts (At 117 volts 60 cycles)
Power Output..... 1.7 Watts Undistorted
2.5 Watts Maximum
Selectivity.....40 KC Broad at 1000 times Signal
Intermediate Frequency.....456 KC
Speaker .....8" Electro-Dynamic

Tuning Frequency Range
B Range..... 528 to 1600 KC
D Range.....5750 to 18300 KC

Sensitivity —External Antenna—(For 0.5 Watt output)
B Range..... 7 Microvolts Average
D Range.....15 Microvolts Average

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.

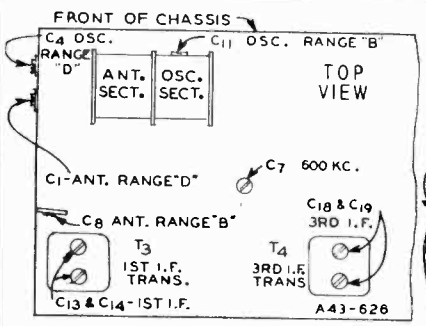
The following equipment is required for aligning:

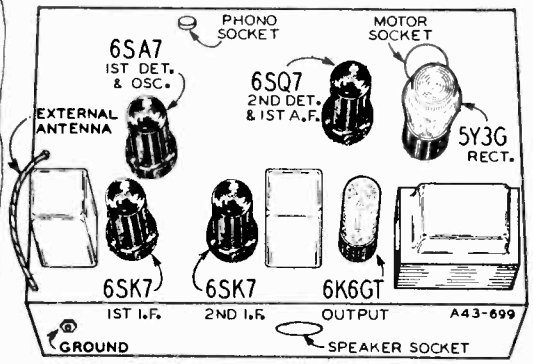
An All Wave Signal Generator which will provide an accurately calibrated signal at the test frequencies as listed.

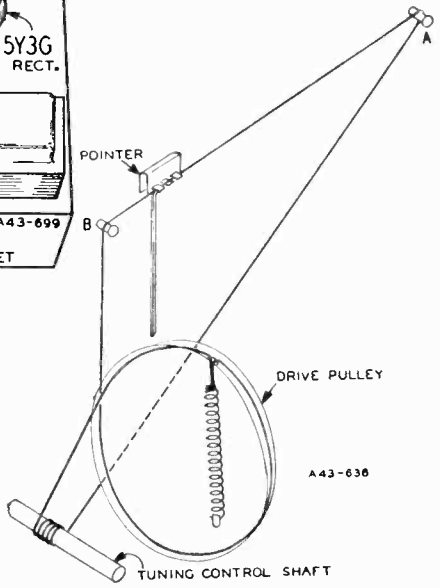
Output Indicating Meter—Non-Metallic Screwdriver.

Dummy Antennas—.1 mf., 100 mmf., and 400 ohms.

SIGNAL GENERATOR FREQUENCY SETTING	SIGNAL GENERATOR CONNECTION AT RADIO	DUMMY ANTENNA	BAND SWITCH SETTING	CONDENSER SETTING	ADJUST TRIMMERS TO MAXIMUM
Console Model—It is not necessary to remove chassis from cabinet. Merely remove chassis mounting screws so that chassis may be turned to reach oscillator trimmer on gang condenser.					
I.F.					
456 KC	Grid of 1st Det.	.1 mf.	B Range	Turn Rotor to Full Open	1st I.F. (C13) & (C14) 3rd I.F. (C18) & (C19)
RANGE B					
1600 KC	External Antenna Clip or Lead	100 mmf.	B Range	Turn Rotor to Full Open	Oscillator Range B (C11)
1400 KC	External Antenna Clip or Lead	100 mmf.	B Range	Turn Rotor to Max. Output Set Indicator to 1400 KC—See Note A	Ant. Range B (C8)
600 KC	External Antenna Clip or Lead See Note B	100 mmf.	B Range	Turn Rotor to Max. Output	600 KC (C7) Rock Rotor—See Note C
RANGE D					
18,300 KC	External Antenna Clip or Lead	400 Ohm	D Range	Turn Rotor to Full Open	Oscillator Range D (C4)
17,000 KC	External Antenna Clip or Lead	400 Ohm	D Range	Turn Rotor to Max. Output	Ant. Range D (C1) Rock Rotor—See Note C
LOOP RANGE B					
1400 KC	External Antenna Clip or Lead See Note D	100 mmf.	B Range	Turn Rotor to Max. Output	Ant. Range B (C8)







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

After each range is completed, repeat the procedure as a final check.

NOTE A—If the pointer is not at 1400 KC on the dial, remove pointer from drive cord. Tune in a 1400 KC signal. Set pointer at the 1400 KC mark on the dial scale. Attach pointer to drive cord.

NOTE B—(Table Model) By means of wooden blocks, stand the loop aerial assembly upright exactly 4 inches from the back of the chassis.

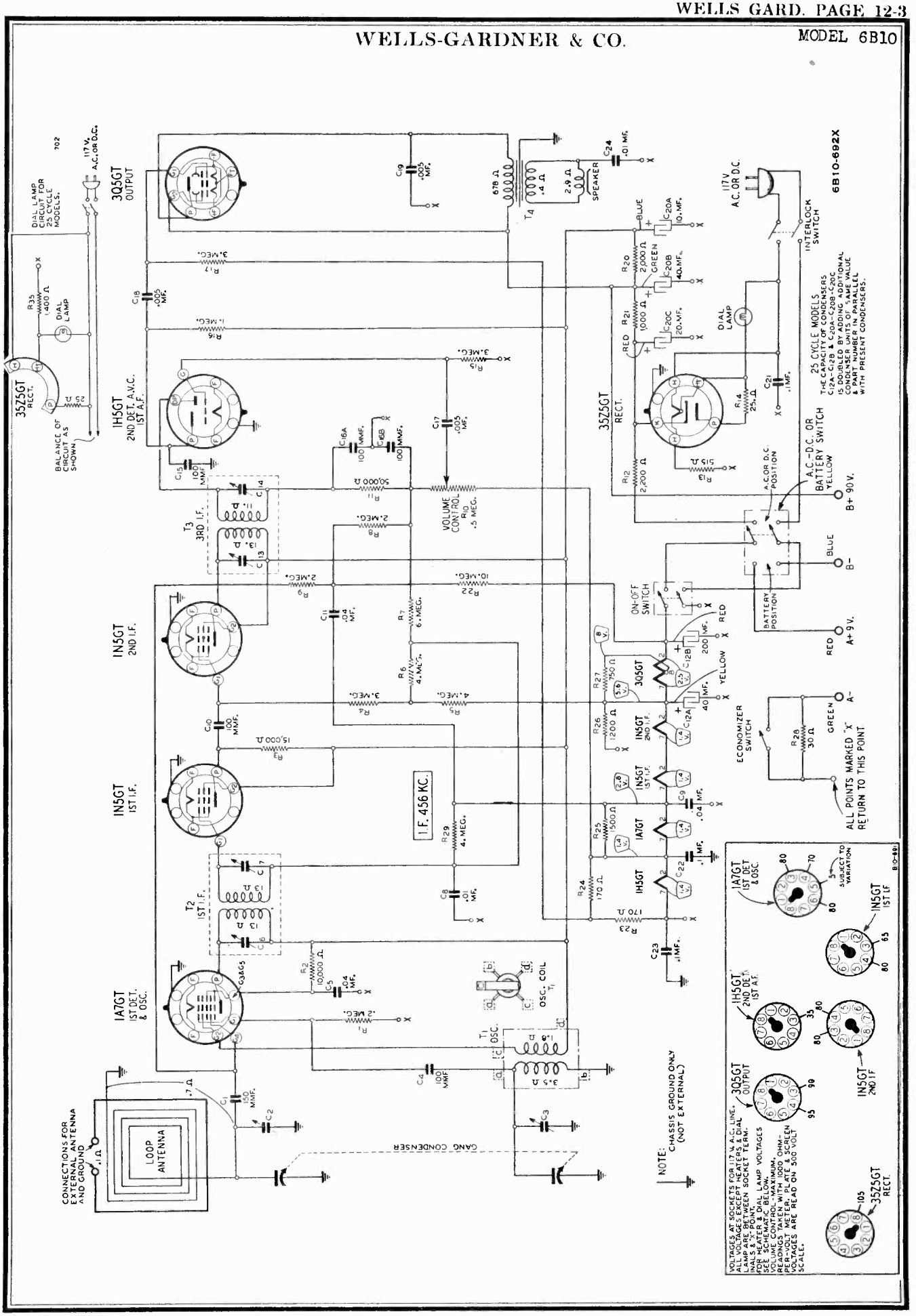
NOTE C—Turn the rotor back and forth and adjust the trimmer until the peak of greatest intensity is obtained.

NOTE D—(Table Model) Re-assemble chassis in cabinet. Replace back on cabinet. Connect ground post of signal generator to external ground clip on loop antenna (Table Model) or ground screw on chassis (Console Model).

CAUTION—When aligning the short wave band, be sure NOT to adjust at the image frequency. This can be checked as follows: Let us say the signal generator is set for 15,000 KC. The signal will then be heard at 15,000 on the dial of the radio. The image signal, which is much weaker, will be heard at 15,000 less 912 KC, or 14,088 KC on the dial. It may be necessary to increase the input signal to hear the image.

CHANGES 7/26/40

On later models, two resistors were added to the phono circuit. One, a 1.5 Megohm resistor, was connected in series with No. 2 terminal on the band switch (Section No. 1) and the ungrounded terminal of the phono socket. The other resistor, .5 Megohm, was connected between the ungrounded terminal of the phono socket and ground.



MODEL 6B10

WELLS-GARDNER & CO.

SPECIFICATIONS

Input Voltages and Currents—Battery Operation

"A" Batteries ..... 9 Volts—50 Ma.
"B" Batteries ..... 90 Volts—11.5 Ma.

Power Consumption (At 117 volts AC Supply) 28 Watts

Power Output

Battery Operation - - - - 150 Mw Undistorted, 350 Mw Maximum

AC Operation - - - - - 200 Mw Undistorted, 400 Mw. Maximum

Selectivity - 50 KC Broad at 1000 Times Signal

Intermediate Frequency - - - - - - 456 KC

Speaker - - - - - - - - - 6" P.M. Dynamic

Tuning Frequency Range - - 540 to 1600 KC

Sensitivity (For .05 Watt Output)

External Antenna - - - 10 Microvolts Average

ALIGNMENT PROCEDURE

Volume Control—Maximum All Adjustments.

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

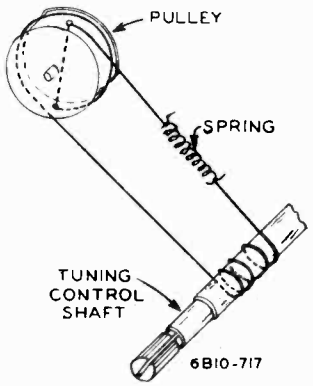
The following equipment is required for aligning:
A Signal Generator which will provide an accurately calibrated signal at the test frequencies as listed.
Output Indicating Meter—Non-Metallic Screwdriver.
Dummy Antennas—.1 mf., 200 mmf.

SIGNAL GENERATOR					
FREQUENCY SETTING	ANTENNA CONNECTION	GROUND CONNECTION	DUMMY ANTENNA	CONDENSER SETTING	ADJUST TRIMMERS TO MAXIMUM (See Trimmer Illustration below)
456 KC	External Antenna Clip on Loop	External Ground Clip on Loop	.1 mf.	Turn Rotor to full open	1st I.F. (C6) & (C7) 3rd I.F. (C13) & (C14)
1600 KC	External Antenna Clip	External Ground Clip	.1 mf.	Turn Rotor to full open	Oscillator (C3)
1400 KC	External Antenna Clip See Note A	External Ground Clip	200 mmf.	Turn Rotor to max. output	Antenna (C2)

NOTE A—Re-assemble chassis in cabinet. Close back on cabinet.

CALIBRATION—To obtain dial scale calibration, tune in an 800 KC signal. The pointer should be at the 800 KC mark on the dial. If it is not, loosen pointer set screw and set the pointer at the 800 KC mark. Retighten set screw.

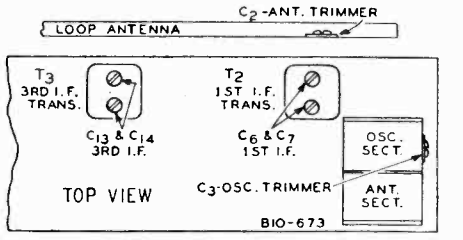
DRIVE CORD REPLACEMENT

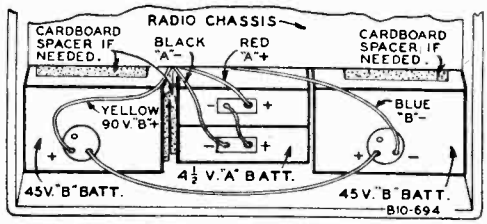


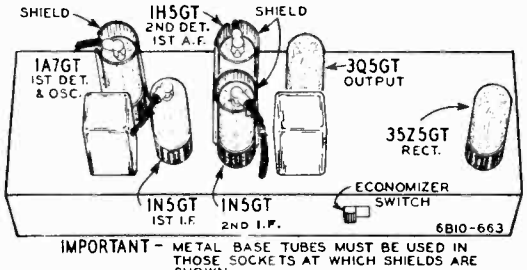
GANG CONDENSER IN CLOSED POSITION

CAUTION

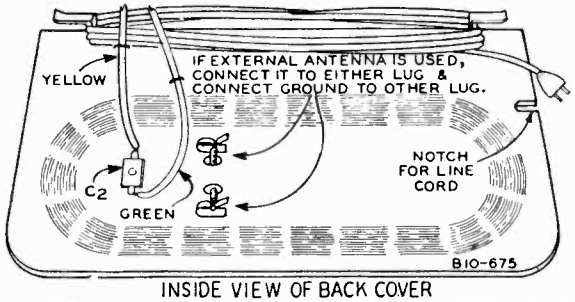
The metal chassis is connected to one side of the line through .20 mfd. Both AC and DC power lines are generally grounded on one side. If the side of the line not connected to the metal chassis through this capacity is grounded and the metal chassis comes in contact with an external ground, this capacity will be connected across the line and there will be an increase in hum.







IMPORTANT - METAL BASE TUBES MUST BE USED IN THOSE SOCKETS AT WHICH SHIELDS ARE SHOWN.



INSIDE VIEW OF BACK COVER

WELLS-GARDNER & CO.

MODEL 6C13

SPECIFICATIONS

Power Consumption	7.8 Amperes at 6.3 Volts
Power Output	6 Watts Undistorted 8 Watts Maximum
Sensitivity	1 Microvolt at .5 Watt Output (L-D Switch in Distance Position)
Selectivity	38 KC Broad at 1000 Times Signal
Tuning Frequency Range	540 to 1560 KC
Intermediate Frequency	456 KC
Speaker	6" Electro-Dynamic

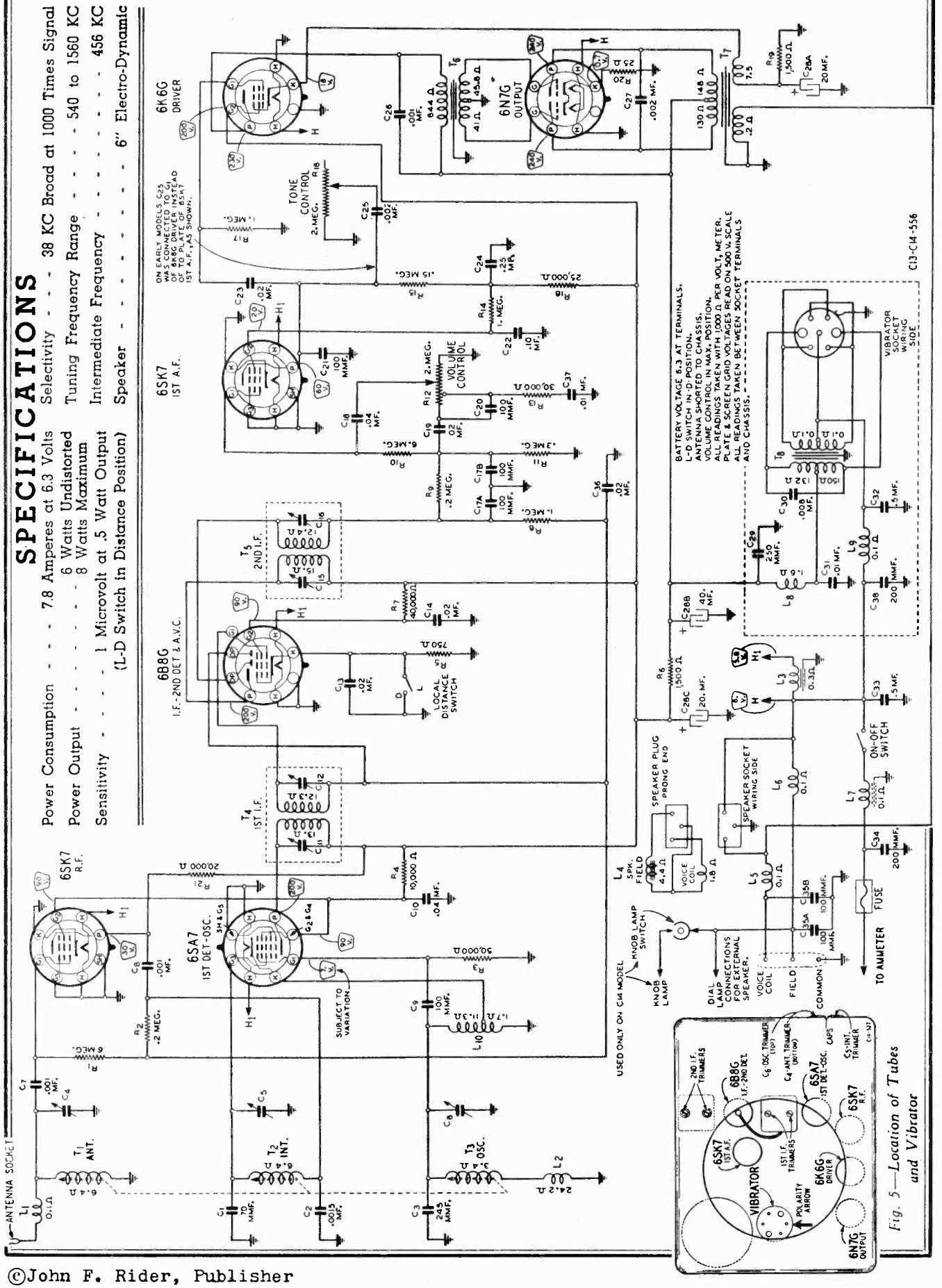


Fig. 5—Location of Tubes and Vibrator

MODEL 6C13

WELLS-GARDNER & CO.

ALIGNMENT PROCEDURE

Remove Grille, Speaker, Trimmer Caps and Rear Cover From Chassis Case—(See Figs. 3 and 5).

Volume Control—Maximum All Adjustments.

Local-Distance Switch—"Distance" Position.

Connect Radio Chassis to Ground Post of Signal Generator with a Short Heavy Lead.

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

The following equipment is required for aligning:

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

Output Indicating Meter—Non-Metallic Screwdriver.

Dummy Antenna—.05 mf., See Note A.

SIGNAL GENERATOR FREQUENCY SETTING	SIGNAL GENERATOR CONNECTION AT RADIO	DUMMY ANTENNA	IRON CORE SETTING	ADJUST TRIMMERS TO MAXIMUM (See Figs. 3 and 5)
I.F. 456 KC	Control Grid (prong No. 8) 6SA7 1st Det. Tube	.05 mf.		1st I.F. (C11) & (C12) 2nd I.F. (C15) & (C16)
OSCILLATOR 1560 KC	Antenna Cable See Note A	See Note A	Extreme Position out of Coil	Oscillator (C6)
1000 KC ADJUSTMENT 1000 KC	Antenna Cable	See Note A	Tune to Max. Output with Tuning Knob	Int. (C5) Ant. (C4)
Reassemble Radio—Install in Car—Connect Car Antenna to Radio.				
Car Antenna Readjustment—Tune in weak signal near 1000 KC—Readjust Antenna Trimmer C4 for maximum output.				

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

CALIBRATION—To calibrate the radio, tune in a station of known frequency. At the back of the control unit is the calibration screw. Remove the dial lamp assembly. Hold the tuning knob. Insert a fine bladed screwdriver and turn this screw until the pointer on the dial scale is at the frequency of the station being received.

A 36 inch shielded antenna cable (30 mmf. capacity) with bayonet connector plug is furnished. Whenever possible, this cable should be used rather than the one which may be supplied with the antenna.

The plug on the antenna cable is inserted in the socket at the side of the chassis case as shown in Fig. 3. The wire at the other end of the cable is connected to the antenna.

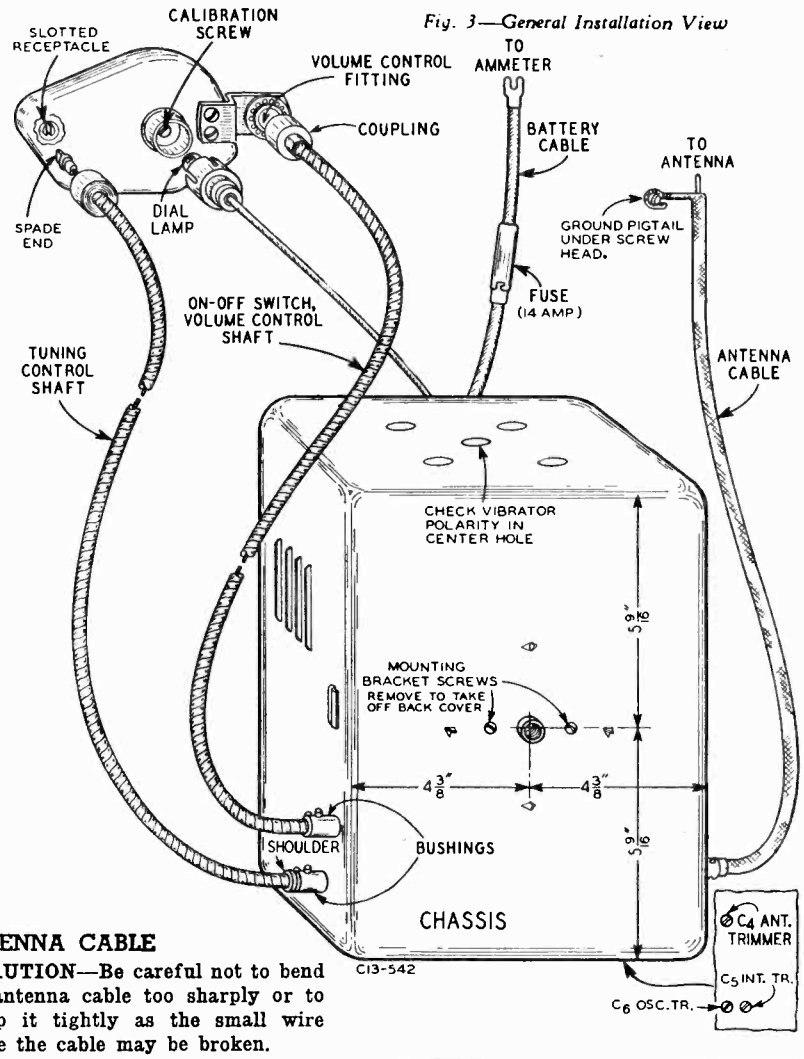
LOW CAPACITY ANTENNA

This radio is designed for a low capacity car antenna. The total capacity of antenna and shielded cable should be 35 to 60 mmf.

HIGH CAPACITY ANTENNA

If this radio is to be installed with a high capacity car antenna (70 to 500 mmf. total capacity of antenna and shielded cable), a 24 inch shielded adapter extension cable is necessary. The adapter is inserted in the socket at the side of the chassis case. Then the antenna cable plug is inserted in the socket at the other end of the adapter.

Fig. 3—General Installation View

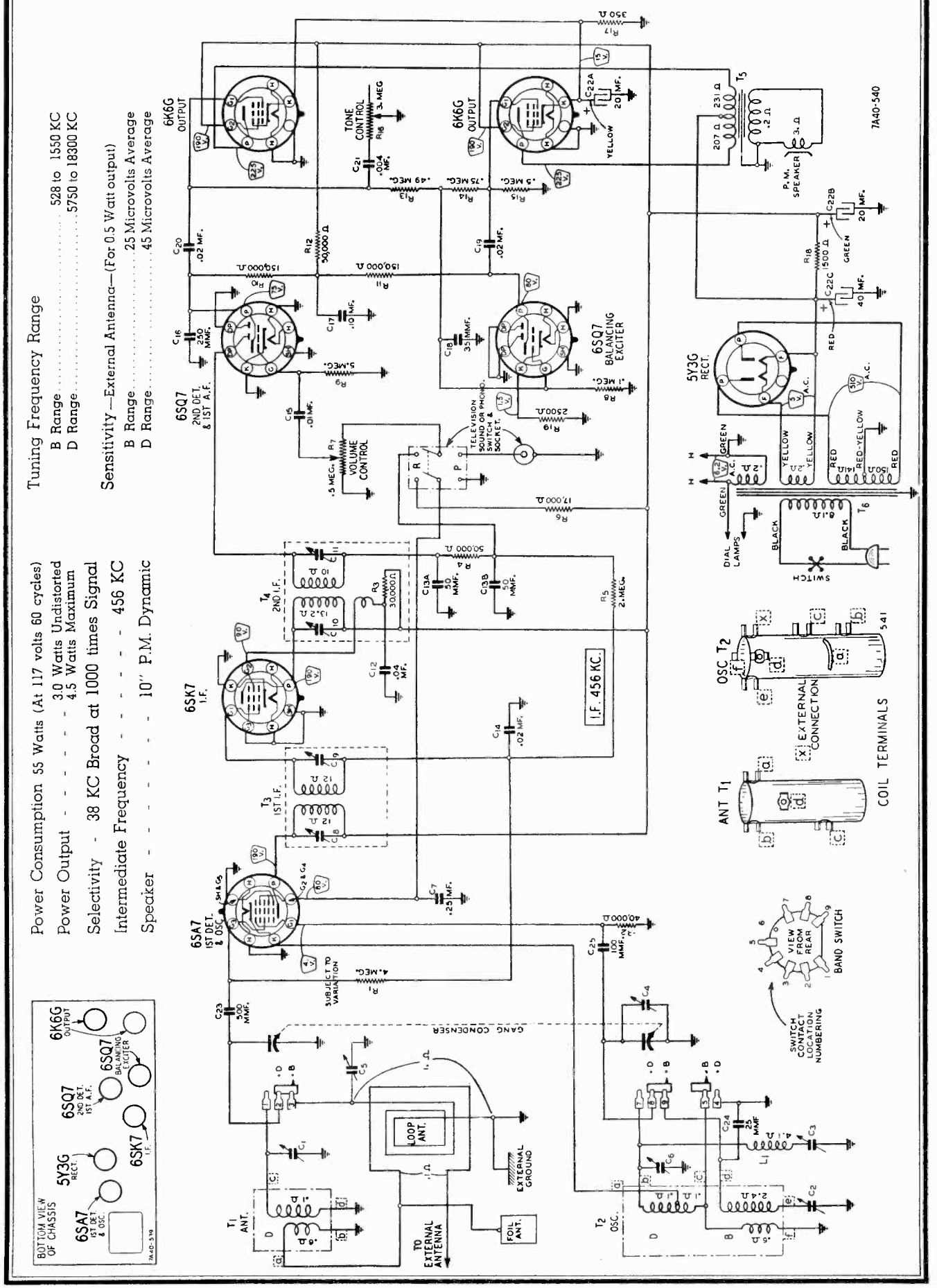


ANTENNA CABLE

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

WELLS-GARDNER & CO.

MODEL 7A40



ALIGNMENT PROCEDURE MODEL 7A40

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.

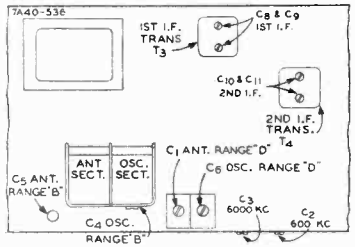
The following equipment is required for aligning:

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., 200 mmf., and 400 ohms.

SIGNAL GENERATOR FREQUENCY SETTING	SIGNAL GENERATOR CONNECTION AT RADIO	DUMMY ANTENNA	BAND SWITCH SETTING	CONDENSER SETTING	ADJUST TRIMMERS TO MAXIMUM
I. F.					
456 KC	Grid of 1st Det.	.1 mf.	B Range	Turn Rotor to Full Open	1st I.F. (C8) & (C9) 2nd I.F. (C10) & (C11)
RANGE B					
1550 KC	Antenna Lead	200 mmf.	B Range	Turn Rotor to Full Open	Oscillator Range B (C4)
1400 KC	Antenna Lead	200 mmf.	B Range	Turn Rotor to Max. Output Set Indicator to 1400 KC—See Note A	Ant. Range B (C5)
600 KC	Antenna Lead	200 mmf.	B Range	Turn Rotor to Max. Output	600 KC (C2) Rock Rotor—See Note B
RANGE D					
18,300 KC	Antenna Lead	400 Ohm	D Range	Turn Rotor to Full Open	Oscillator Range D (C6)
17,000 KC	Antenna Lead	400 Ohm	D Range	Turn Rotor to Max. Output	Ant. Range D (C1) Rock Rotor—See Note B
6000 KC	Antenna Lead	400 Ohm	D Range	Turn Rotor to Max. Output	6000 KC (C3) Rock Rotor—See Note B
LOOP RANGE B					
1400 KC See Note C	None See Note C		B Range	Turn Rotor to Max. Output	Ant. Range B (C5)



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

After each range is completed, repeat the procedure as a final check.

NOTE A—If the pointer is not at 1400 KC on the dial, remove pointer from drive cord. Tune in a 1400 KC signal. Set pointer at the 1400 KC mark on the dial scale. Attach pointer to drive cord.

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

NOTE C—Reinstall set in cabinet. Connect a loop approximately one foot in diameter across the antenna and ground posts of the signal generator. Place signal generator so that this loop is between 3 and 10 feet from loop in cabinet.

CAUTION—When aligning the short wave band, be sure NOT to adjust at the image frequency. This can be checked as follows: Let us say the signal generator is set for 15,000 KC. The signal will then be heard at 15,000 on the dial of the radio. The image signal, which is much weaker, will be heard at 15,000 less 912 KC or 14,088 KC on the dial. It may be necessary to increase the input signal to hear the image.

Television Sound or Phonograph Connections

On the back panel of the chassis base is a switch and a socket for a single shielded pin tip at which connections are made. The connector on the cable from a television receiver or from a phono pickup can be inserted in the socket. (The cable connector must be a single shielded pin tip type, Part No. 6A224.)

If Television programs ever become available in your community, the audio amplifier and speaker of this radio may be used to reproduce Television sound in conjunction with any "Television Picture Receiver and Sound Converter." Phonograph records may also be played through the radio.

When phonograph or television sound reproduction is desired, the knob should be moved to the "Television Sound or Phonograph" position. For radio reception, the knob should be in the "Radio" position.

Procedure for Setting the Station Buttons

MODELS 7A40, 7A41

Setting a Station Button

Turn the manual tuning knob so that the dial pointer moves toward 1550 KC until the stop is reached.

At the right side of the escutcheon (from the front) will be seen a cap which covers a hole in the escutcheon—See illustration. Pull off this cap.

At the end of the tube in back of the hole in the escutcheon is the locking screw. Using a small handled screwdriver, unlock the mechanism by turning this screw in a counter-clockwise direction several turns.

TO SET STATIONS ACCURATELY, DO NOT JAR THE RADIO OR BUTTONS WHILE THE MECHANISM IS UNLOCKED.

Select the first station from the list you have prepared, and carefully tune in this station by means of the manual tuning knob.

With one hand, hold the manual tuning knob to prevent it from turning and with the other hand, push one of the station buttons shown in the illustration *all the way in*. It is better to start with button No. 1.

Hold *this* button all the way *in*. With the other hand, see whether or not this station is still accurately tuned in by turning the tuning knob a slight amount back and forth. *Be sure to hold the button all the way in.*

Release the button slowly after the station is tuned in.

CAUTION — Do not touch this button again while the mechanism is unlocked as the setting may be altered.

Carefully tune in the second station on your list. Then hold the tuning knob and push the second button slowly and firmly all the way in. Check for accurate tuning.

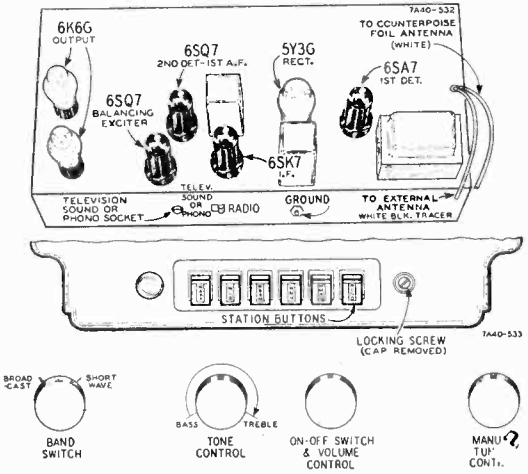
Proceed in the same manner to set any additional stations on your list on the remaining station buttons.

After all the stations are set, it will be necessary to lock the mechanism so that the settings will not change. Turn the manual tuning knob so that the dial pointer moves toward 1550 KC until the stop is reached. Then, with a SMALL HANDLED screwdriver, turn the locking screw in a clockwise direction until it is tight. Tighten the locking screw firmly but not excessively to avoid stripping the threads. Replace the cap over the hole.

Remove the correct station call letter tabs from the sheets supplied by bending the sheet back and forth at the score mark until the tab can be broken off. Press the tab all the way to the bottom of the space provided in the button. Cover the call letter tab with a celluloid tab, pressing this in until it snaps into place.

If at any time you wish to change the setting of a button from one station to another, repeat the above procedure. Changing the setting of one button will not affect the setting of any of the other buttons.

Any button may be used for any station you can receive, although it will be more convenient to set the stations so that the kilocycle numbers decrease from left to right.



Drive Cord Replacement

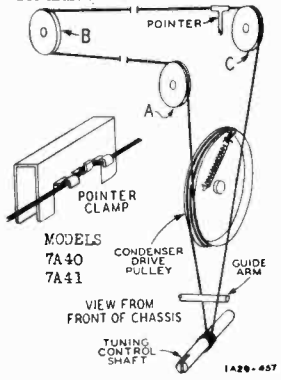
Tie one end of the new drive cord (approximately 70 inches in length) to tension spring. Turn gang condenser to full open position. Thread free end of drive cord up through hole in rim of condenser drive pulley and pull spring flush against pulley rim.

Wind one turn counter-clockwise (from condenser drive pulley side of chassis) around drive pulley. This turn should progress to the left (from front of chassis). Pass cord in back of guide arm—see illustration. Then wind drive cord 3½ turns counter-clockwise (from front of chassis) around tuning control shaft. Turns should progress away from the chassis.

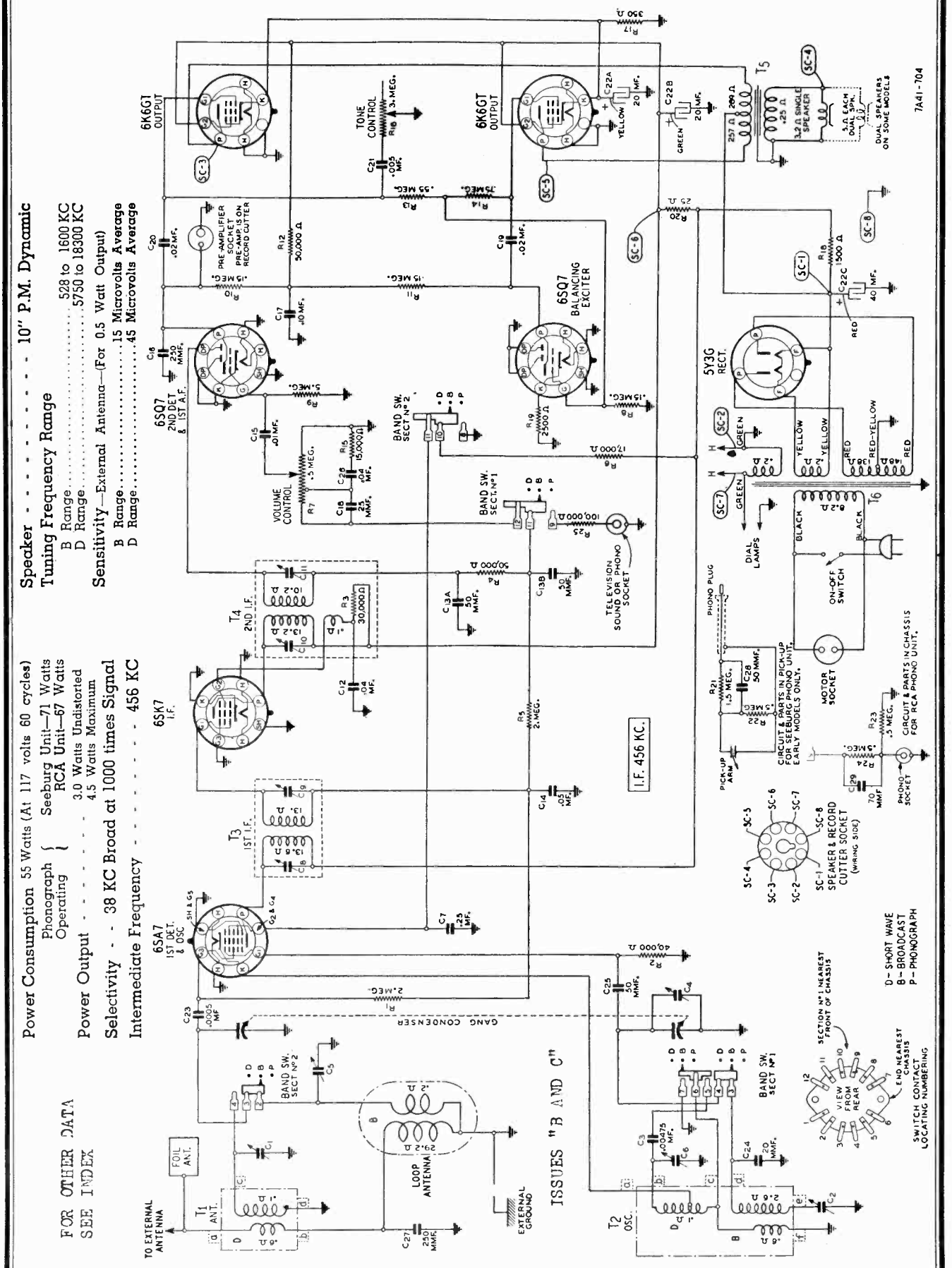
Pass cord around pulleys C, B, and A as shown in illustration. Then wind cord ¾ turn counter-clockwise (from condenser drive pulley side of chassis) around drive pulley. The turn should be at right side (from front of chassis) of pulley groove.

Thread cord through hole in pulley groove and knot securely to spring. Stretch spring and secure free end to hook on drive pulley.

Dial Pointer Attachment—Tune in a signal of known frequency. Set the pointer at this frequency on the dial scale. Secure pointer to cord—See illustration.

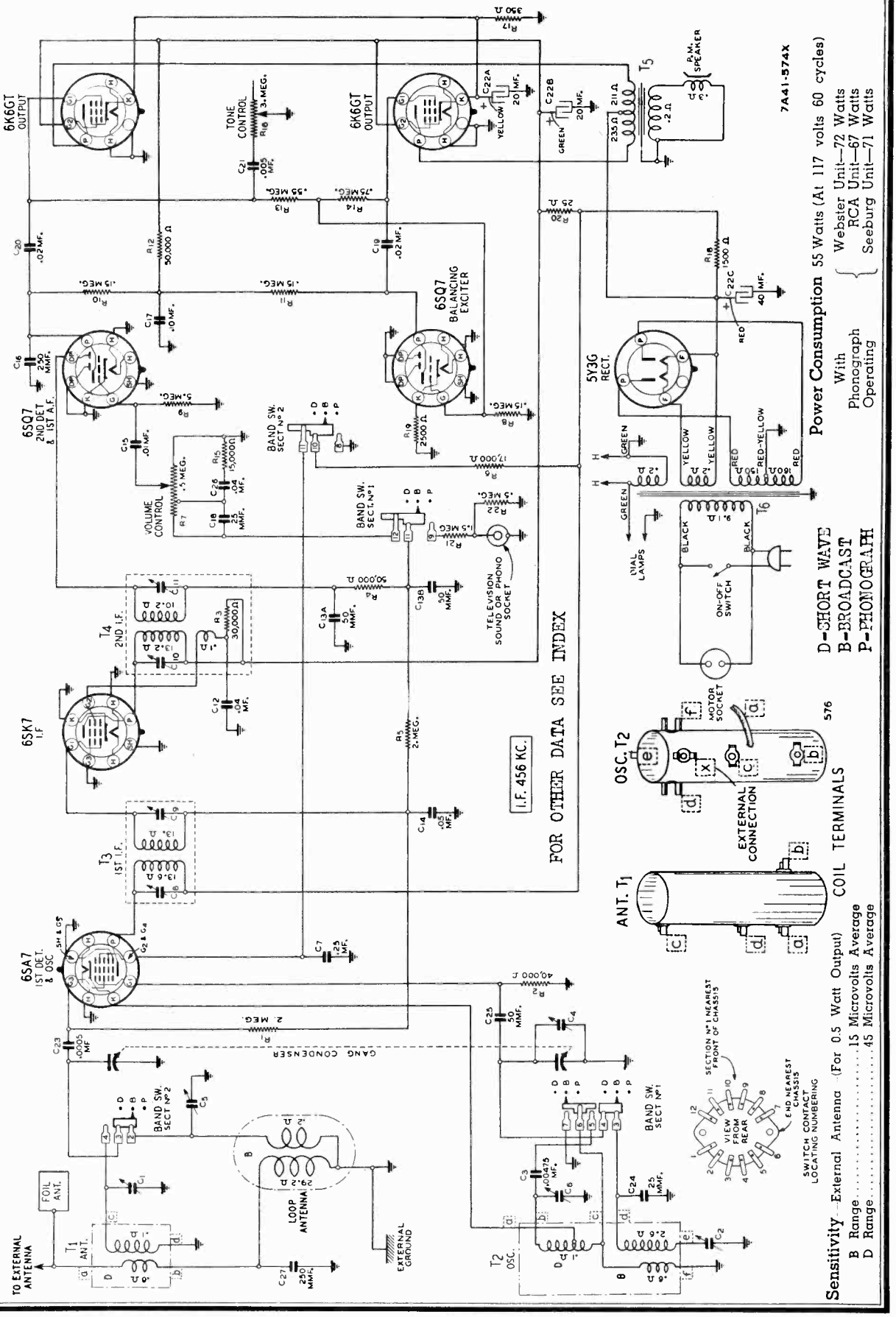


WELLS-GARDNER & CO. MODEL 7A41-704



MODEL 7A41-574X

WELLS-GARDNER & 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.

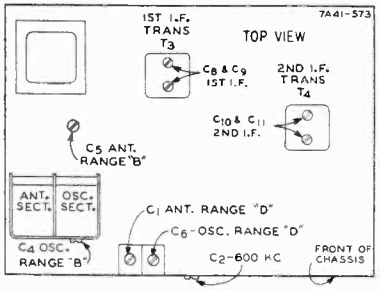
The following equipment is required for aligning:

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	SIGNAL GENERATOR CONNECTION AT RADIO	DUMMY ANTENNA	BAND SWITCH SETTING	CONDENSER SETTING	ADJUST TRIMMERS TO MAXIMUM
Remove chassis and top plate from cabinet as explained in the article on this subject. Remove top plate from chassis. Then				place chassis on a stand in such a way that the loop connection plugs can be reinserted in the loop sockets on the chassis.	
I. F. 456 KC	Grid of 1st Det.	.1 mf.	B Range	Turn Rotor to Full Open	1st I.F. (C8) & (C9) 2nd I.F. (C10) & (C11)
RANGE B 1600 KC	Antenna Lead	100 mmf.	B Range	Turn Rotor to Full Open	Oscillator Range B (C4)
1400 KC	Antenna Lead	100 mmf.	B Range	Turn Rotor to Max. Output Set Indicator to 1400 KC—See Note A	Ant. Range B (C5)
600 KC	Antenna Lead	100 mmf.	B Range	Turn Rotor to Max. Output	600 KC (C2) Rock Rotor—See Note B
RANGE D 18,300 KC	Antenna Lead	400 Ohm	D Range	Turn Rotor to Full Open	Oscillator Range D (C6)
17,000 KC	Antenna Lead	400 Ohm	D Range	Turn Rotor to Max. Output	Ant. Range D (C1) Rock Rotor—See Note B
LOOP RANGE B 1400 KC See Note C	None See Note C		B Range	Turn Rotor to Max. Output	Ant. Range B (C5)



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

After each range is completed, repeat the procedure as a final check.

NOTE A—If the pointer is not at 1400 KC on the dial, remove pointer from drive cord. Tune in a 1400 KC signal. Set pointer at the 1400 KC mark on the dial scale. Attach pointer to drive cord.

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

NOTE C—Reinstall set in cabinet. Connect a loop approximately one foot in diameter across the antenna and ground posts of the signal generator. Place signal generator so that this loop is between 3 and 10 feet from loop in cabinet.

CAUTION—When aligning the short wave band, be sure NOT to adjust at the image frequency. This can be checked as follows: Let us say the signal generator is set for 15,000 KC. The signal will then be heard at 15,000 on the dial of the radio. The image signal, which is much weaker, will be heard at 15,000 less 912 KC, or 14,088 KC on the dial. It may be necessary to increase the input signal to hear the image.

Operating the Automatic Phonograph

The operation of the phonograph is simple but the phonograph instruction folder packed with this instruction book should be carefully read and understood before an attempt is made to put the record changer in operation.

The volume and tone controls are used in the same manner for phonograph reproduction as they are for radio reception—See article "Operating the Radio."

To Turn the Phonograph On

Turn the on-off switch knob to the right. (See illustration—Page 2.) A click will be heard and the dial will light. Wait 30 seconds for the tubes to heat.

Turn the Phonograph-Radio knob to the phonograph (P) position—See illustration.

For detailed instructions regarding the operation of the automatic record changer, see the phonograph instruction folder.

To Turn the Phonograph Off

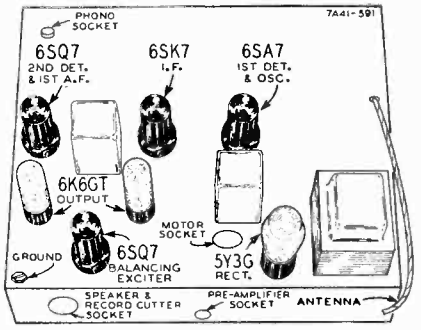
The instructions for turning off the automatic record changer are given in the phonograph instruction folder. Be sure to turn the radio on-off switch knob to the left. A click will be heard and the dial lamps will be off.

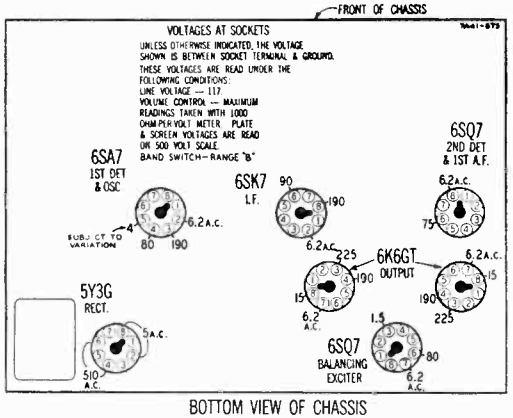
Television-Frequency Modulation -Home Recorder

Television Sound Connections

If Television programs ever become available in your community, the audio amplifier and speaker of this radio may be used to reproduce Television sound in conjunction with any "Television Picture Receiver and Sound Converter."

On the top of the chassis base is a socket to which is connected the phono cable shielded pin tip. Upon removal of this pin tip, the connector on the cable from a television receiver can be inserted in the socket. (The cable connector must be a single shielded pin tip type, Part No. 6A224.)





When Television sound reproduction is desired, the Phonograph-Radio knob should be turned to the Phonograph (P) position. For radio reception, the knob should be in one of the two Radio positions.

Frequency Modulation Connections

If Frequency Modulated programs ever become available in your community, the audio amplifier and speaker of this radio may be used to reproduce these programs in conjunction with any Frequency Modulation Converter.

The connection to the chassis is exactly the same as explained in the preceding article "Television Sound Connections."

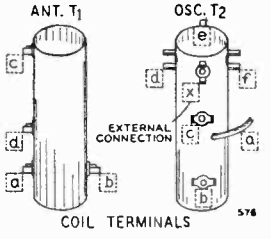
When Frequency Modulated programs are desired, the Phonograph-Radio knob should be turned to the Phonograph (P) position. For radio reception, the knob should be in one of the two Radio positions.

Home Recorder

This radio is designed so that you may take advantage of a *new* and extremely interesting form of entertainment. By replacing the record changer unit in this radio with a unit which includes a record cutter and a record changer, the new world of making your own records is opened to you.

Your favorite radio programs, comedy, dance or symphony may be permanently recorded. By means of a microphone attachment, voice or music of your own production may be recorded.

For detailed information regarding this record cutter unit, get in touch with the dealer from whom the radio was purchased.



Battery Cable and Fuse

The battery connection is made at the ammeter. The end of the battery cable with the connecting lug is secured to one of the posts at the back of the ammeter in the instrument panel. The other end of the cable with the fuse receptacle connects to the battery cable from the radio after the fuse has been inserted. A 14 ampere fuse is used.

Dial Lamp Cable

Insert the dial lamp assembly in the hole at the top of the lamp housing as indicated in Fig. 3. The dial lamp used in this unit is a 6-8 volt automobile type lamp (Bulb No. 51).

Suppression of Motor Noise

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

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

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

DISTRIBUTOR SUPPRESSOR—A distributor suppressor will be required in most cases. Remove the high tension lead to the distributor. Insert a distributor suppressor and connect the wire to the other end of the suppressor (See Fig. 7). If this is not practical, cut the high tension lead *close to the distributor* and use a wood screw end type distributor suppressor in this line.

Withdraw Antenna Cable Plug

Turn on the radio and start the motor.

If motor noise is heard, proceed as follows:

BONDING CABLES—Try grounding to the fire wall all cables and tubing which pass through it such as oil lines, gas lines, etc. By means of a file, contact can be established between any of the lines and the fire wall in order to determine whether such a ground will reduce the noise. To bond the cables to the fire wall, clean the point of contact, wrap a length of braided shielding around the cable, and solder the connection. Then solder the end of the shielding to the fire wall or ground it under a screw head if one is convenient.

Sufficient play should be left in the bonding shielding so that movement of the cables or tubing will not loosen this shielding from the fire wall.

BONDING STEERING COLUMN, ETC.—It is possible for the steering column, foot pedals, and brake lever to carry interference to the back of the fire wall at which point it may affect the radio. See if each of these items is well grounded to the frame of the car. By means of a file or a braided shielding jumper, contact can be established between any of these items and the frame in order to determine whether or not such a ground will reduce the noise. A piece of one inch braided shielding should be used if such a ground is necessary and this shielding may be grounded under a screw head, nut, or may be soldered in position.

Then Reinsert Antenna Cable Plug

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

DOME LIGHT LEAD—Noise due to radiation from the dome light lead is generally experienced only when a roof antenna is being used. Disconnect the dome light lead connection at the back of the instrument panel and ground this wire. If this is found to reduce the noise noticeably, interference is being radiated by the dome light lead. Reconnect the dome light lead and then connect a .5 mfd. bypass condenser between the point at which this lead leaves the pillar post and ground.

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

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

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

The electric gauges used for oil, water, and gas are often a source of interference and bypass condensers should be tried.

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

GROUNDING MOTOR AND OTHER PARTS—The motor must, in every case, be well grounded to the frame of the car. If it is not, use a very heavy braided lead for this purpose, similar to a storage battery ground lead. In like manner, it may be necessary to check the grounding of the metal fire wall, instrument panel, transmission, radiator, hood, and muffler to the frame of the automobile. To obtain a good electrical connection, scrape off the paint, if necessary, at the point where ground contact is made.

PEENING ROTOR ARM—In extreme cases of motor noise, it is advisable to peen the distributor rotor arm, that is, increase the length of the arm by using a small machinist's hammer. This will lessen the gap between the rotor arm and the stationary contacts thus reducing the spark. Be sure, after peening the arm, that it does not strike the stationary contacts.

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

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

WHEEL OR BRAKE STATIC—Noise from this source is generally experienced only when an under car antenna is being used. To determine if noise is being caused from this source, set the car in motion; then with the motor shut off and the clutch disengaged, apply the brakes. If the noise stops, the source of the static is in the wheels. The use of a front or rear wheel static eliminator will generally end the trouble.

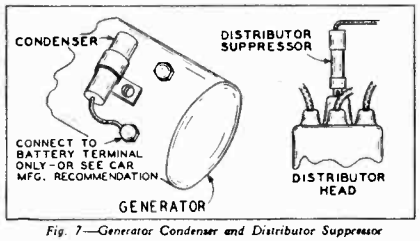


Fig. 7—Generator Condenser and Distributor Suppressor

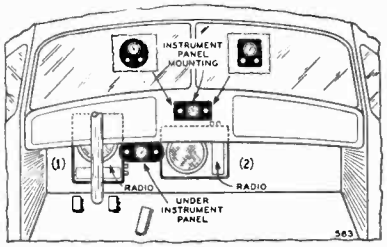


Fig. 1—Control Assembly and Chassis Mountings

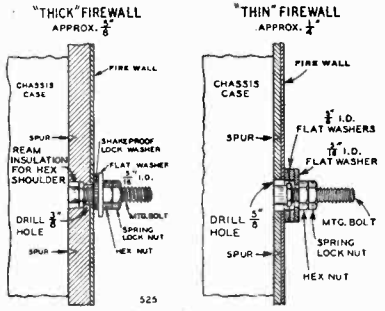


Fig. 2—Details of Chassis Mounting

Procedure for Setting the Stations

There are 6 positions of the Automatic Station Mechanism. Five of these are Automatic Station positions and one is the Manual Tuning position. A sixth station may be tuned in with the Manual Tuning Knob. If the position of this knob is not disturbed, the sixth station will be automatically tuned in when the Automatic Station Mechanism is in the Manual Tuning position.

The different positions are reached by pushing the Automatic Station Knob firmly and gently all the way in and releasing this knob so that it snaps all the way back. Pushing in the knob once in this manner will advance the mechanism to the next position, twice will move it to the second position, etc.

When the radio is in the Manual Tuning position, the dial is illuminated. When it is in any of the 5 station setting positions, one of the numbers on the Automatic Station Knob is illuminated.

Five stations may be set for Automatic Tuning. A sixth station may also be automatically tuned in at the Manual Tuning position as explained above.

Make a list of your favorite stations, those which you tune in regularly. There may be any number up to and including 6 in this list.

It is better to list the stations in frequency order.

Any station setting position may be used for any station you can receive although it is better to put the stations on your list in frequency order.

In the Chicago area, for example, the following stations *might* be listed:

Position	Station	Frequency	From Manual Tuning Position
No. 1	WMAQ	670 KC	1 Push
No. 2	WGN	720 KC	2 Pushes
No. 3	WBBM	770 KC	3 "
No. 4	WLS	870 KC	4 "
No. 5	WCFL	970 KC	5 "
No. 6	MANUAL TUNING		6 "

First get the mechanism in the Manual Tuning position. If the dial is illuminated, it is already in this position. If one of the numbers on the Automatic Station Knob is illuminated, depress this knob one or more times until every number is dark.

Select the first station from the list you have made and carefully tune in this station by rotating the Manual Tuning Knob. Determine what program is being broadcast.

Then advance the mechanism to position No. 1 by depressing the Automatic Station Knob once. As shown in Fig. 3, there are 5 small holes in the chassis case through which the station setting screws are reached.

Insert a small bladed screwdriver in the opening for setting screw No. 1 and turn this screw in or out until the desired station (the one previously tuned in) is heard. Turning the screw in (clockwise) will tune in stations with lower kilocycle numbers while turning the screw out (counter-clockwise) will tune in stations with higher kilocycle numbers.

There is a card supplied with the radio on which is a frequency scale. Using the screwdriver as a guide, this scale will show the approximate frequency (kilocycle number) at which the setting screw is set.

Be sure not to tune in some other station broadcasting the same program. Turn the screw slowly back and forth until this station is carefully tuned in to the clearest and loudest point. The final motion of the setting screw should be to the right (clockwise). The station is now set for position No. 1.

Next advance the mechanism to position No. 2 by depressing the Automatic Station Knob once more. Tune in the second station on your list by adjusting setting screw No. 2 as explained above.

If you have difficulty in knowing when this station is tuned in, push the Automatic Tuning Knob 4 times to reach the Manual Tuning position. Then tune in this station with the Manual Tuning Knob, noting the program that is being broadcast. Push in the Automatic Station Knob twice to get the mechanism back into position No. 2 and again tune in this station by carefully adjusting setting screw No. 2 until the station is clearest and loudest.

Proceed in like manner to set any remaining stations on your list.

WELLS-GARDNER & CO. MODEL 7C15

SPECIFICATIONS

Power Consumption	8.1 Amperes at 6.3 Volts
Power Output	6 Watts Undistorted, 8 Watts Maximum
Sensitivity	1 Microvolt at .5 Watt Output (L-D Switch in Distance Position)
Selectivity	38 KC Broad at 1000 Times Signal
Tuning Frequency Range	540 to 1560 KC
Intermediate Frequency	456 KC
Speaker	6" Electro-Dynamic

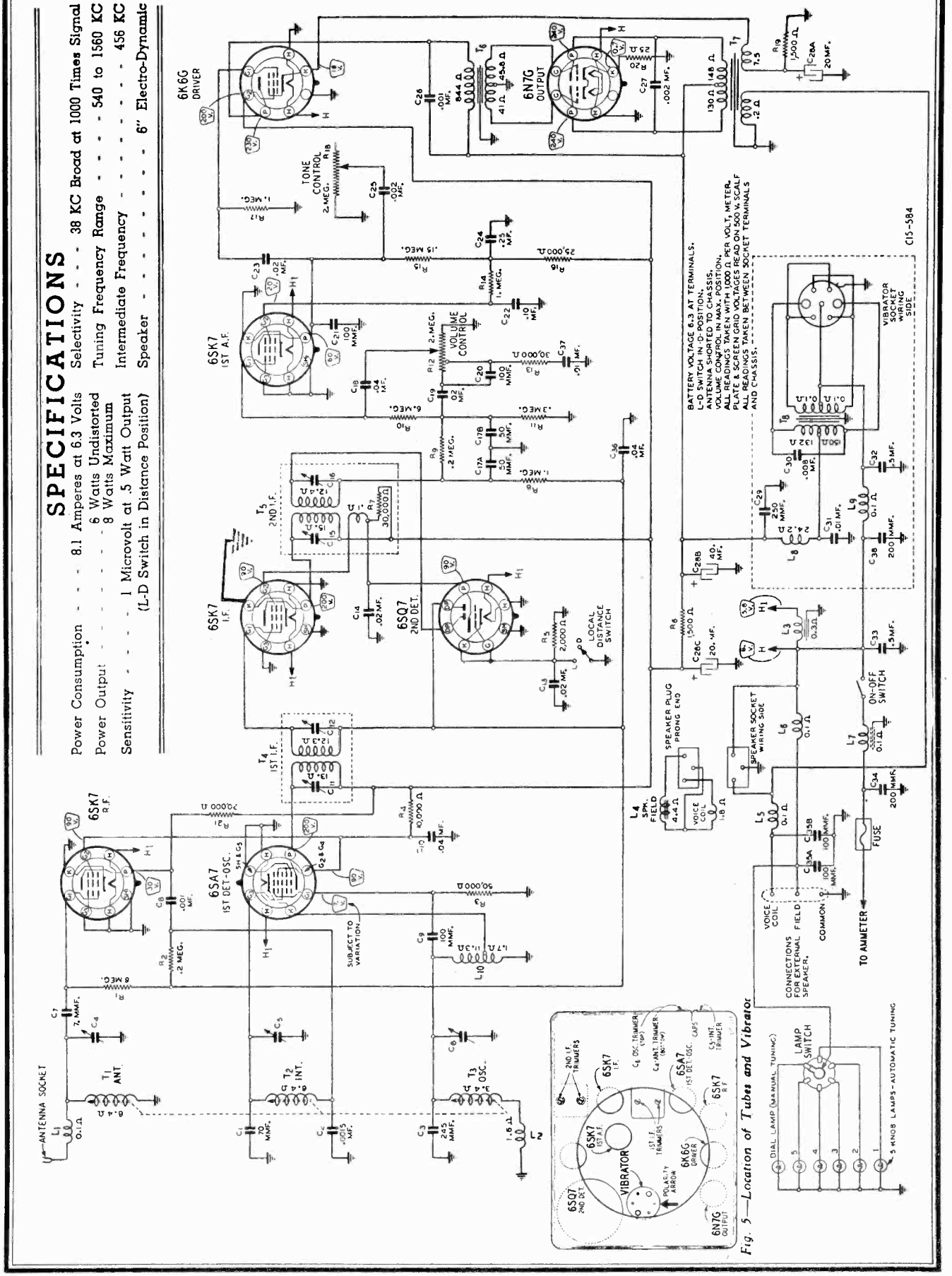


Fig. 5—Location of Tubes and Vibrator

Antenna

Practically all car antennas at the present time are supplied with a shielded lead-in cable. The total capacity of the antenna and shielded lead-in should be 35 to 60 mmf. It is recommended that the antenna and lead-in be a type approved by the factory.

The plug on the antenna cable is inserted in the socket at the side of the chassis case as shown in Fig. 3. The wire at the other end of the cable is connected to the antenna.

LOW CAPACITY ANTENNA

This radio is designed for a low capacity car antenna. The total capacity of antenna and shielded cable should be 35 to 60 mmf.

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

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

HIGH CAPACITY ANTENNA

If this radio is to be installed with a high capacity car antenna (70 to 500 mmf. total capacity of antenna and shielded cable), one of two procedures must be followed. If a short length antenna cable is being used, a 24 inch shielded adapter extension cable may be obtained. If a long antenna cable such as a 60 inch antenna cable is being used with the high capacity antenna a small adapter only need be purchased. Either of these two procedures will adapt the high capacity antenna circuit to the low capacity antenna input circuit. In both cases the correct adapter should be inserted in the socket at the side of the chassis case. Then the antenna cable plug should be inserted in the adapter.

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

ANTENNA CABLE

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

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

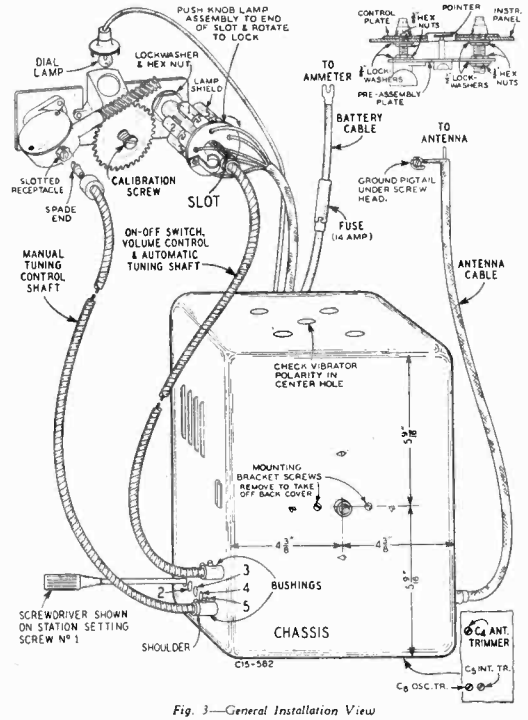
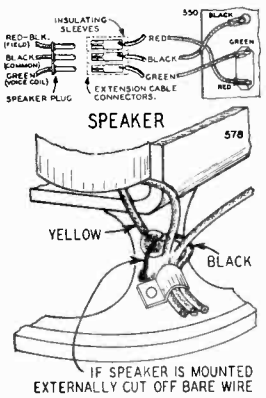


Fig. 3—General Installation View



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

Inserting Vibrator Unit

IMPORTANT—The vibrator unit can be inserted in two ways. The proper method of insertion will depend on which terminal of the car battery is grounded. If the POSITIVE (+) terminal of the car battery is grounded, line up the + mark on the top of the vibrator with the arrow on the chassis base. If the NEGATIVE (—) terminal of the car battery is grounded, line up the — mark on the top of the vibrator with the arrow on the chassis base.

On one side of the chassis case is a hole (See Fig. 3) through which may be seen the vibrator. If a red stripe is seen on the side of the vibrator, the vibrator is inserted for cars on which the positive terminal of the battery is grounded. If no paint mark is visible, the vibrator is inserted for cars with the negative terminal of the battery grounded.

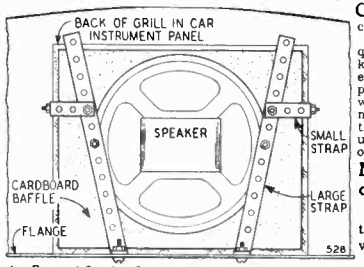


Fig. 4—External Speaker Connections, One Method of Mounting, and Cutting Off Bare Ground Wire When Speaker is Mounted Externally.

Adjusting Antenna Trimmer

After the antenna is connected, tune in a weak signal at approximately 1000 KC with the volume control about three-fourths on. Turn the adjusting screw of the antenna trimmer (C4) up or down until maximum output is obtained. See Fig. 3 for location of this trimmer.

Calibration

(For Later type control with no stop on pointer shaft). Tune to a station of known frequency (about 850 KC). Turn the knurled calibration screw at the back end of the pointer disc shaft one complete turn (360 degrees) in a clockwise direction (from back of instrument panel). Then continue to turn the screw in a clockwise direction until the pointer is at the frequency of the station being received.

Mounting Speaker in Back of Instrument Panel Grille

Some automobiles have a grille in the instrument panel, in back of which a speaker may be mounted. The speaker may be taken out of the case should it be desired to mount it in back of such a grille.

Remove the grille plate and speaker from the case (see article "Replacing Tubes and Vibrator"). Pull out the speaker plug. Replace the grille, putting the round cardboard gasket under the grille. Cut off the bare ground wire on the speaker as shown in Fig. 4.

At one side of the speaker grille is a rectangular cover. Unscrew the screw at each end and remove this cover. Three clips, each a different color, will be seen. Using the 24 inch, 3 wire cable supplied with the radio, match the color of each wire with a clip and insert the solid pin tips in the clips—See Fig. 4. Pass the cable through the same hole in the cover provided for the other wires. Push each of the connectors at the other end of the cable over the proper prong of the speaker plug, matching the color as shown in Fig. 4. Be sure the insulating sleeves cover the connectors completely. Tape over the speaker plug and connectors. Replace the cover.

Two perforated straps are provided which may be used as mounting brackets to secure the speaker in back of the grille. The method of mounting will vary in different cars. If the spring clamps on the back of the speaker frame interfere with the mounting, they may be cut off.

In the mounting shown in Fig. 4, the long and short straps have each been cut in two pieces and attached as indicated. The speaker should be supported at two points on the rim 180 degrees apart.

Secure the straps under any nearby screw head or nut which is convenient. Frequently it will be advisable, as shown in Fig. 4, to bend the straps under the flange at the bottom of the instrument panel and then drill two holes in the flange through which to extend the mounting bolts.

A piece of cardboard is provided for use as a baffle. This is cut for a 5¼ inch speaker which may be purchased if it is required. The outline of the hole necessary for a 6 inch speaker (speaker in radio) is shown on the cardboard. Cut the cardboard to size so that it covers all of the grille opening that is not covered by the speaker.

Several pieces of felt are also provided to be used around the rim of the speaker in those cars in which the grille is curved or bent.

Replacing Tubes and Vibrator

To replace the tubes or vibrator, remove the screw on the grille plate. Take off grille plate and pull the speaker out of the case. The speaker is held in place by 2 spring clamps. The tubes and vibrator are now accessible for replacement.

ALIGNMENT PROCEDURE

Remove Grille, Speaker, Trimmer Caps and Rear Cover From Chassis Case—(See Figs. 3 and 5).

Volume Control—Maximum All Adjustments.

Local-Distance Switch—"Distance" Position.

Connect Radio Chassis to Ground Post of Signal Generator with a Short Heavy Lead.

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

The following equipment is required for aligning:

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

Output Indicating Meter—Non-Metallic Screwdriver.

Dummy Antenna—.05 mf., See Note A.

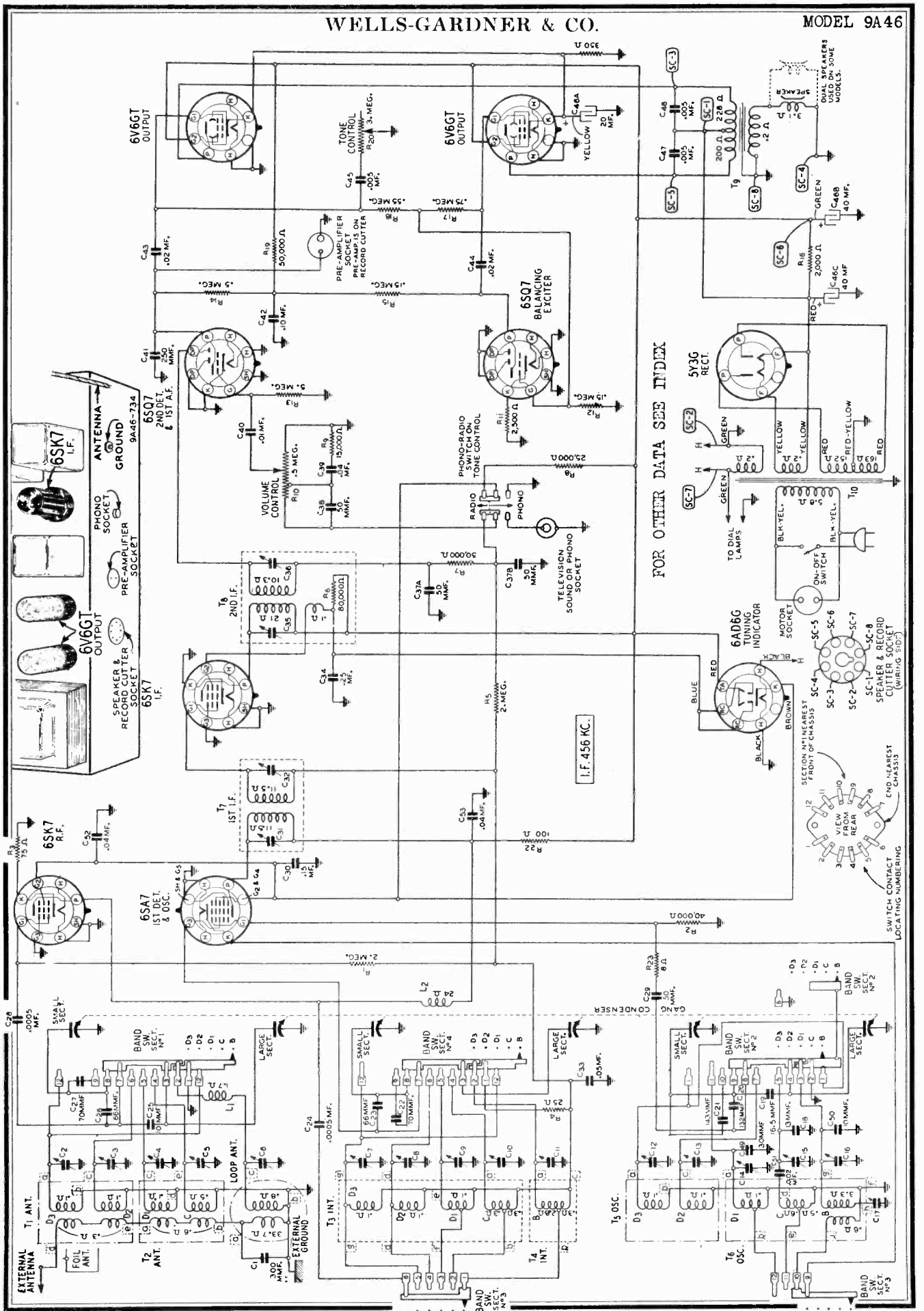
SIGNAL GENERATOR FREQUENCY SETTING	SIGNAL GENERATOR CONNECTION AT RADIO	DUMMY ANTENNA	IRON CORE SETTING	ADJUST TRIMMERS TO MAXIMUM (See Figs. 3 and 5)
I.F. 456 KC	Control Grid (prong No. 8) 6SA7 1st Det. Tube	.05 mf.		1st I.F. (C11) & (C12) 2nd I.F. (C15) & (C16)
OSCILLATOR 1560 KC	Antenna Cable See Note A	See Note A	Extreme Position out of Coil	Oscillator (C6)
1000 KC ADJUSTMENT 1000 KC	Antenna Cable	See Note A	Tune to Max. Output with Tuning Knob	Int. (C5) Ant. (C4)

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

Car Antenna Readjustment—Tune in weak signal near 1000 KC—Readjust Antenna Trimmer C4 for maximum output.

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

CALIBRATION—To calibrate the radio, tune in a station of known frequency. At the back of the pointer disc shaft is the calibration screw. Turn this screw with the fingers until the pointer on the dial scale is at the frequency of the station being received.



Series 9A46

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
Remove chassis from cabinet—Reconnect loop antenna plugs.					
I. F. 456 KC	Grid of 1st Det.	.1 mf.	B Range	Turn Rotor to Full Open	1st I.F. (C31) & (C32) 2nd I.F. (C35) & (C36)
RANGE B 1730 KC	Antenna Lead	100 mmf.	B Range	Turn Rotor to Full Open	Oscillator Range B (C16)
1500 KC	Antenna Lead	100 mmf.	B Range	Turn Rotor to Max. Output Set Indicator to 1500 KC— See Note A	Ant. Range B (C6) Int. Range B (C11)
600 KC	Antenna Lead	100 mmf.	B Range	Turn Rotor to Max. Output	600 KC (C17) Rock Rotor—See Note B
RANGE C 7400 KC	Antenna Lead	400 Ohm	C Range	Turn Rotor to Full Open	Oscillator Range C (C15)
7000 KC	Antenna Lead	400 Ohm	C Range	Turn Rotor to Max. Output	Ant. Range C (C5) Int. Range C (C10) Rock Rotor—See Note B
RANGE D_1 12,300 KC	Antenna Lead	400 Ohm	D_1 Range	Turn Rotor to Full Open	Oscillator Range D_1 (C14)
11,900 KC	Antenna Lead	400 Ohm	D_1 Range	Turn Rotor to Max. Output	Ant. Range D_1 (C4) Int. Range D_1 (C9) Rock Rotor—See Note B
RANGE D_2 15,450 KC	Antenna Lead	400 Ohm	D_2 Range	Turn Rotor to Full Open	Oscillator Range D_2 (C13)
15,250 KC	Antenna Lead	400 Ohm	D_2 Range	Turn Rotor to Max. Output	Ant. Range D_2 (C3) Int. Range D_2 (C8) Rock Rotor—See Note B
RANGE D_3 21,800 KC	Antenna Lead	400 Ohm	D_3 Range	Turn Rotor to Full Open	Oscillator Range D_3 (C12)
21,500 KC	Antenna Lead	400 Ohm	D_3 Range	Turn Rotor to Max. Output	Ant. Range D_3 (C2) Int. Range D_3 (C7) Rock Rotor—See Note B
LOOP RANGE B 1500 KC	Antenna Lead See Note C	100 mmf.	B Range	Turn Rotor to Max. Output	Ant. Range B (C6)

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

After each range is completed, repeat the procedure as a final check.

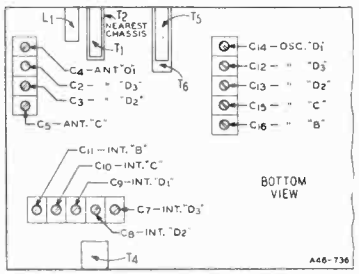
NOTE A—If the pointer is not at 1500 KC on the dial, remove pointer from drive cord. Set pointer at the 1500 KC mark on the dial scale. Attach pointer to drive cord.

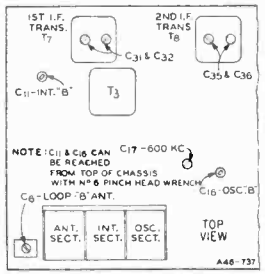
NOTE B—Turn the rotor back and forth and adjust the trimmer until the peak of greatest intensity is obtained.

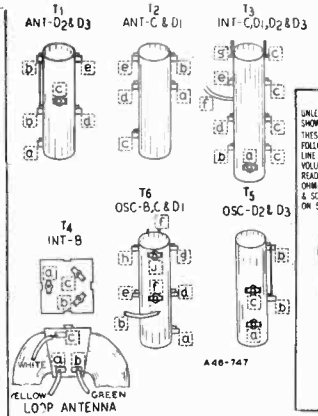
NOTE C—Re-assemble chassis in cabinet.

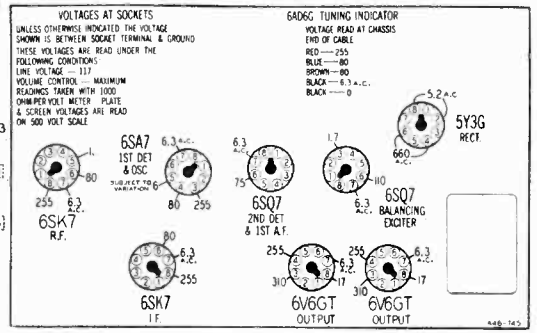
CAUTION—When aligning the short wave bands, be sure NOT to adjust at the image frequency. This can be checked as follows:

Let us say the signal generator is set for 15,000 KC. The signal will then be heard at 15,000 on the dial of the radio. The image signal, which is much weaker, will be heard at 15,000 less 912 KC, or 14,088 KC on the dial. It may be necessary to increase the input signal to hear the image.









PROCEDURE FOR SETTING THE STATION BUTTONS

SELECTING THE STATIONS TO BE SET

There are 6 buttons on the automatic tuning dial by means of which 6 stations may be set for quick tuning.

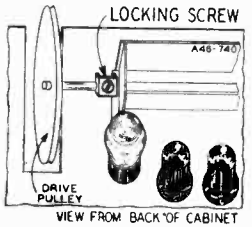
Make a list of your favorite stations, those which you tune in regularly. There may be any number up to and including 6 in this list.

It is better to list the station with the lowest kilocycle number first, the station with the next higher kilocycle number next, and so on.

Any button may be used for any station you can receive, although it will be more convenient to set the stations so that the kilocycle numbers increase from left to right.

SETTING A STATION BUTTON

Unlock the push button tuning mechanism from the back of the radio. On the drive pulley shaft and at the left side (from back of radio) of the push button tuning assembly is a locking screw—See illustration.



VIEW FROM BACK OF CABINET

Turn the manual tuning knob until the locking screw can be easily reached with a screwdriver.

Using a small handled screwdriver, unlock the mechanism by turning this screw several turns in a counter-clockwise direction.

TO SET STATIONS ACCURATELY, DO NOT JAR THE RADIO OR BUTTONS WHILE THE MECHANISM IS UNLOCKED.

Select the first station from the list you have prepared, and carefully tune in this station by means of the manual tuning knob, using the tuning eye as a guide.

With one hand, hold the manual tuning knob to prevent it from turning and with the other hand, push one of the station buttons shown in the illustration *all the way in*. It is better to start with the left hand button.

Hold *this* button all the way in. With the other hand, see whether or not this station is still accurately tuned in by moving the tuning knob a slight amount back and forth while observing the tuning eye. *Be sure to hold the button all the way in.*

Slowly release the button after the station is tuned in.

CAUTION—Do not touch this button again while the mechanism is unlocked as the setting may be altered.

Carefully tune in the second station on your list. Then hold the tuning knob and push the second button slowly and firmly all the way in. Check for accurate tuning.

Proceed in the same manner to set any additional stations on your list on the remaining station buttons.

After all the stations are set, it will be necessary to lock the mechanism so that the settings will not change. Turn the manual tuning knob until the locking screw can be easily reached with a screwdriver. Then, with the SMALL HANDLED screwdriver, turn the locking screw in a clockwise direction until it is tight. Tighten the locking screw firmly but not excessively to avoid stripping the threads.

If at any time you wish to change the setting of a button from one station to another, repeat the above procedure. Changing the setting of one button will not affect the setting of any of the other buttons.

Remove the correct station call letter tab for this button from the sheet supplied by bending the sheet back and forth at the score marks.

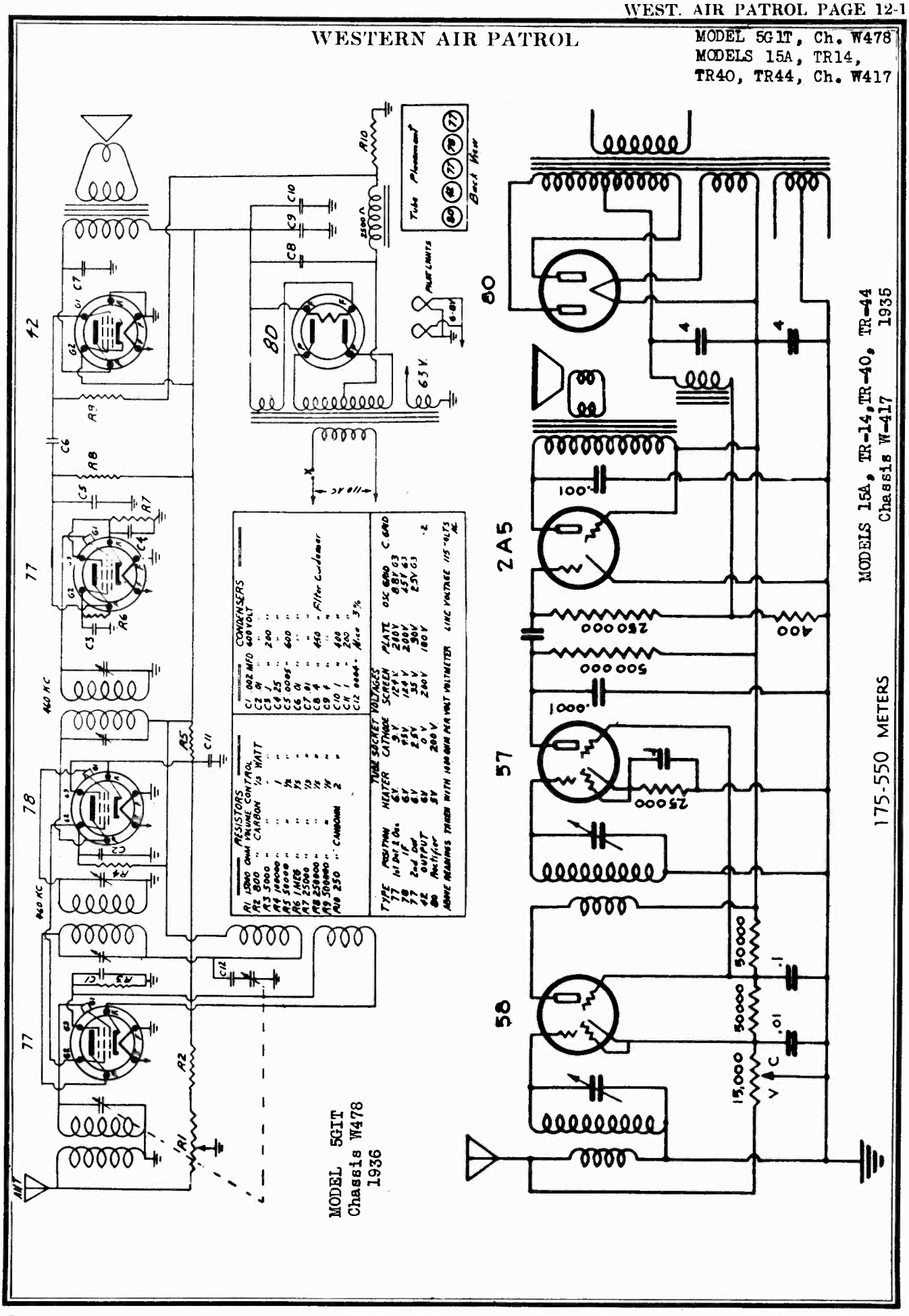
In Models With Transparent Buttons—Insert a celluloid reinforcement tab half way in the slot at the front of the first station button.

Place the call letter tab in front of the celluloid reinforcement tab and insert it in slot. Push both tabs all the way in the button slot. Follow the same procedure for inserting the station call letter tabs in any other buttons.

In Models With Brown Opaque Buttons—Press the tab all the way to the bottom of the space provided in the button. Cover the call letter tab with a celluloid tab, pressing this in until it snaps into place.

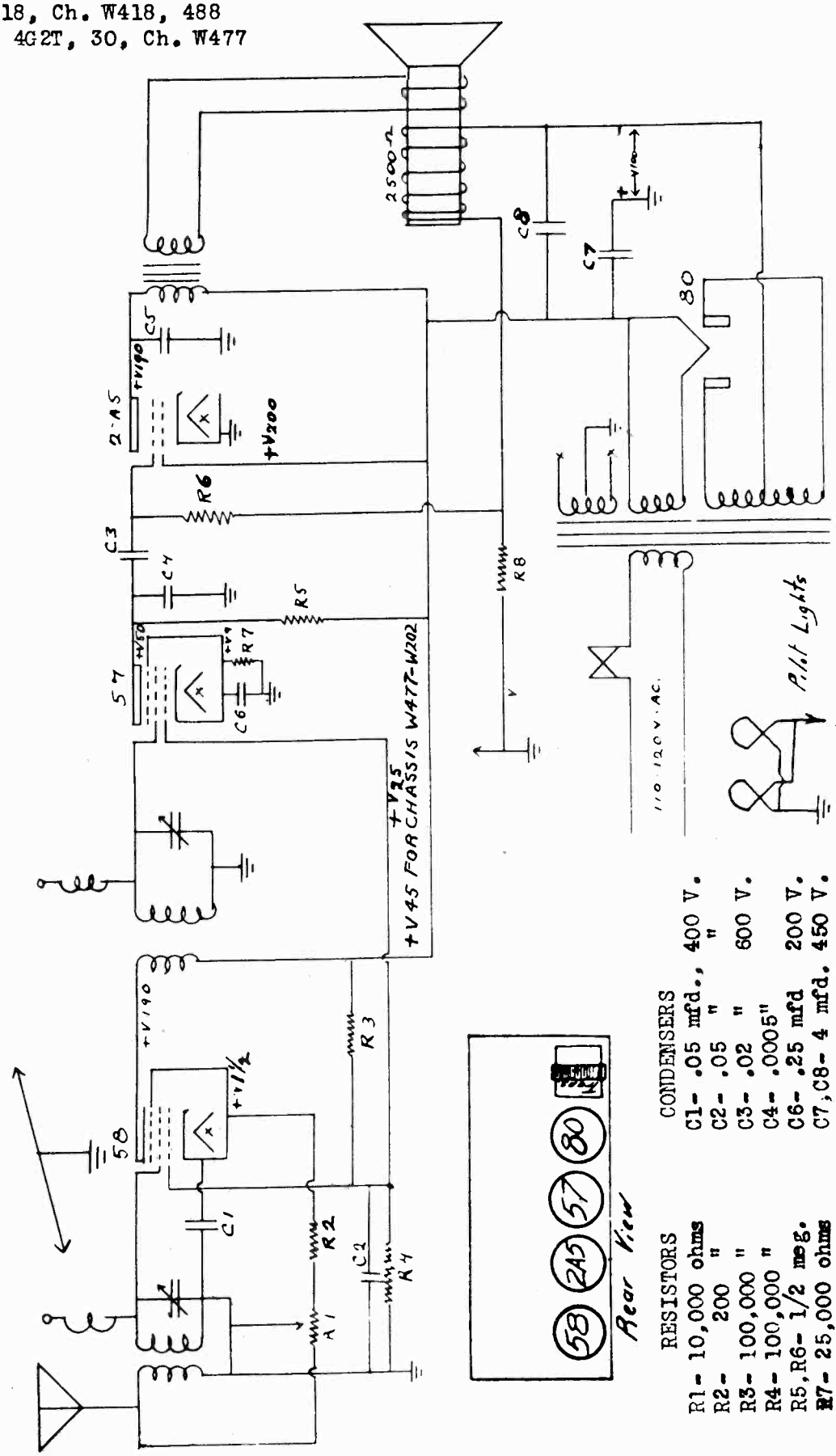
WESTERN AIR PATROL

MODEL 5G1T, Ch. W478
MODELS 15A, TR14,
TR40, TR44, Ch. W417



MODEL 17, Ch. W405
MODEL 18, Ch. W418, 488
MODELS 4G2T, 30, Ch. W477

WESTERN AIR PATROL



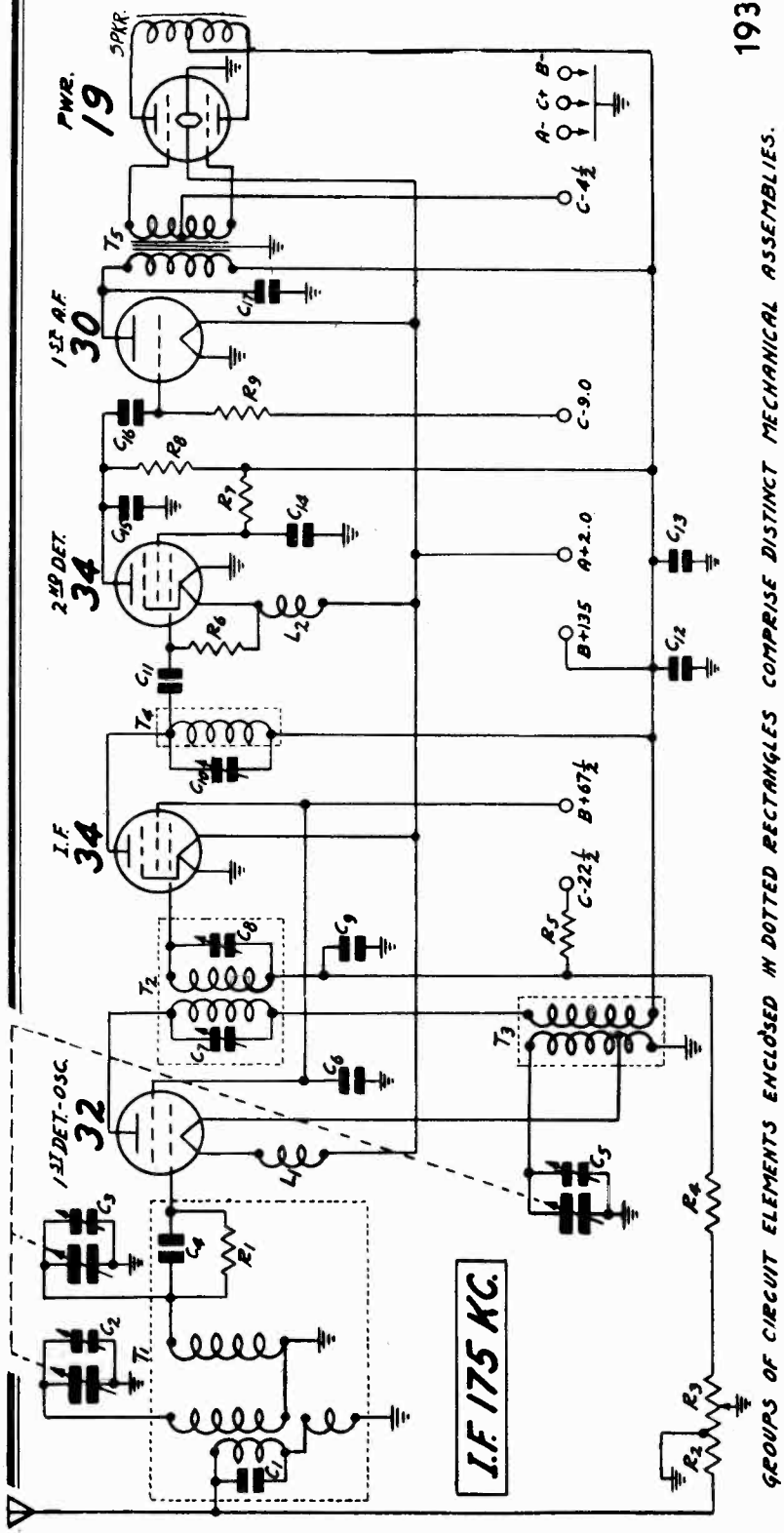
CONDENSERS
C1- .05 mfd., 400 V.
C2- .05 " " "
C3- .02 " 600 V.
C4- .0005"
C6- .25 mfd 200 V.
C7,C8- 4 mfd. 450 V.

RESISTORS
R1- 10,000 ohms
R2- 200 "
R3- 100,000 "
R4- 100,000 "
R5,R6- 1/2 meg.
R7- 25,000 ohms
R8- 400 "

WESTERN AIR PATROL

MODEL 25G, Ch. W419

1936



GROUPS OF CIRCUIT ELEMENTS ENCLOSED IN DOTTED RECTANGLES COMPRISE DISTINCT MECHANICAL ASSEMBLIES.

C1 150 MMF MOULDED
C2 GANG TRIMMER
C3 GANG TRIMMER
C4 35 MMF MOULDED
C5 GANG TRIMMER
C6 .25 MF 180 V.
C7 40-100 MMF } DUAL
C8 20-70 MMF } (P-17037)
C9 .05 MF 180 V.
C10 40-100 MMF (P-17038)
C11 50 MMF MOULDED
C12 .10 MF 180 V.
C13 4.0 MF 150 V. ELECTROLYTIC (P-43128)
C14 .10 MF 180 V.
C15 .002 MF 300 V.
C16 .006 MF 300 V.
C17 .002 MF 300 V.

R1 1.0 MEGOHM .2 W.
R2 10 000 OHM } VOLUME CONTROL (P-36x20)
R3 60 000 OHM }
R4 900 OHM .2 W.
R5 6 500 OHM .2 W.
R6 2.0 MEGOHM .2 W.
R7 100 000 OHM .5 W.
R8 40 000 OHM .5 W.
R9 1.0 MEGOHM .2 W.

L1 SINGLE FILAMENT REACTOR (P-9928)
L2 SINGLE FILAMENT REACTOR (P-9928)

T1 DOUBLE TUNED ANTENNA COIL (P-9931)
T2 1ST I.F. COIL (P-9930)
T3 OSC. COIL (P-9932)
T4 2ND I.F. COIL (P-9934)
T5 AUDIO INPUT TRANS. (P-5041)

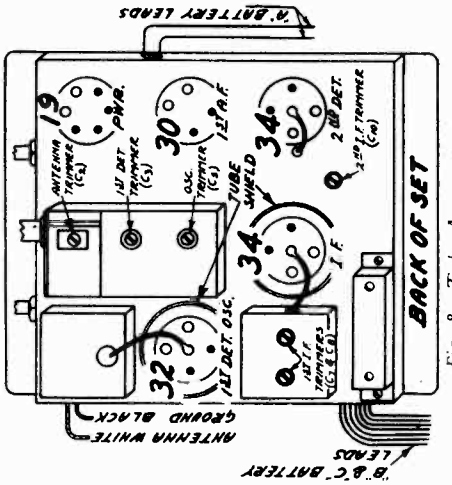


Fig. 8—Tube Arrangement

"A" Battery and Regulator

This receiver is designed to operate with a 2 volt storage cell, but may be operated with a 3 volt dry "A" battery if used with a voltage regulator. The receiver may also be used with an air cell "A" battery provided a series resistor is used.

3 Volt "A" Battery—The voltage regulator required with this type of battery as illustrated in Fig. 4 is not supplied with the receiver unless specified. This device consists of a rheostat which controls the voltage, a voltmeter for measuring its value as supplied to the receiver and a small push button switch for cutting the voltmeter in and out of the circuit. It has two prongs at the bottom which plug into the socket in the platform at the rear left corner of the chassis. The circuit diagram of the regulator is shown in Fig. 5.

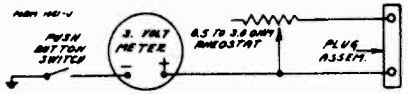


Fig. 5—Schematic Diagram of Voltage Regulator

The receiver is shipped from the factory with a jumper between the two socket connections and a fibre strip over the socket. This strip must be removed and the jumper taken out as illustrated in Figs. 6 and 7 before the regulator can be inserted as shown in Fig. 4. The jumper is in the "A+" line.

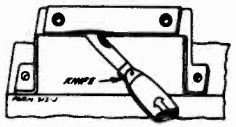


Fig. 6—Prying off Fiber Cover

When a new 3 volt "A" battery is inserted, the adjusting knob must be turned to the left hand position and then turned up until the voltmeter indicates 1.9 to 2 volts. The push button must be held in until the adjustment is completed. Caution the user never to operate the receiver with the adjustment beyond 2 volts.

Air Cell "A" Battery—If an air cell "A" battery is used, a series resistor will be required to reduce the voltage to the proper level of 2 volts for the tube filaments. Although the voltage regulator mentioned above can be used, the series resistor is cheaper and is satisfactory as the voltage of one of these batteries drops very little during the useful life of the battery

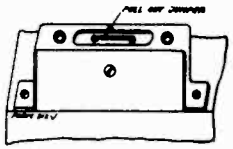


Fig. 7—Removing Jumper Wire

Replacing Drive Cord

Remove chassis from cabinet.

Take off the pointer by removing the screw at the center of the dial.

Remove the dial by taking out the six rivets from the dial assembly.

Remove the on-off indicator dial by pulling it forward.

With the condenser plates in a completely open position, slip the new drive cord thru hole "A" (from the front) in the drive drum. See Fig. 9.

Pull the cord thru this hole far enough to tie a knot near the end. Make this knot large enough so that it will not pull back thru the hole.

Slip the opposite end of the drive cord thru hole "B" of the drive drum.

Now slip the piece of fine tubing (about ¼" long) over the drive cord and insert about half of this tubing into hole "B" as shown in the illustration. This is important to prevent the cord from being cut.

Bring the drive cord down to the drive shaft and wrap the cord in a clockwise direction about two and one-half times around this shaft, progressing toward the front.

Bring the cord up from the drive shaft and wrap it around the drive drum approximately one and one-half times in a clockwise direction, progressing toward the front until the cord is up to the turned-in portion of the flange "C". See Fig. 9.

Pull the cord tight and tie the end of the cord to the tension spring as shown in the illustration. The knot should be at the bend in the flange so that the spring will be under sufficient tension to prevent the drive cord from slipping.

Now, by applying a little tension on the spring, hook the other end of the spring into hole "D" on the opposite side of the drum. Hook the spring from the inside (in later models hole "D" is replaced by a hook on the inside of the drive drum).

Turn the drive shaft back and forth several times to take out the slack and see if the drive is operating properly. *If the cord slips on the drive shaft, remove the spring from the drive drum and add an additional knot in the cord at the spring in order to put greater tension on the spring.*

Replace the on-off indicator dial, care being taken that the indicator is so placed that it will properly show the on and off positions.

Re-assemble the pointer and dial to the drive assembly. If the rivets are broken use No. 2 by ¼" long round head machine screws and nuts.

Testing Batteries

If the receiver does not operate satisfactorily test the batteries under load. A high resistance meter is required for the "B" and "C" voltages. If any of the batteries are considerably below their rated voltage, new ones should be used. When the "B" batteries are replaced the "C" batteries should also be replaced. The reason for this is that the "C" drain is such that the "C" batteries are run down in about the same time as the "B" batteries.

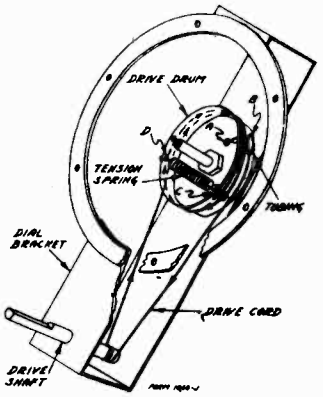


Fig. 9—Replacing Drive Cord

VOLTAGES AT SOCKETS
Volume Control at Maximum—Antenna Shorted to Ground. B+135 Volts. Voltages to Chassis

Type of Tube	Function	Across Filament	Plate to Gnd.	Screen to Gnd.	Grid to Gnd.	Normal Plate M. A.
32	1st Det. & Osc.	2.0	135	67.5	7.5 (1) (2)	2.5
34	I. F.	2.0	135	67.5	2.5 (3)	2.8
34	2nd Det.	2.0	50	40 (1)	0	1.8
30	1st Audio	2.0	135		9 (4)	3.0
19	Output	2.0	135		4.5	3.2 Total

(1) With 250,000 ohm meter.
(2) Subject to variation.
(3) With 25,000 ohm meter.
(4) Read at "C" battery.

Alignment Procedure and Dial Calibration

Misalignment or mistracking of condensers generally manifests itself as broad tuning and lack of volume at portions or all of the standard wave band. The receivers are all properly aligned at the factory with precision instruments and realignment should not be attempted unless all other possible causes of the faulty operation have first been investigated and unless the service technician has the proper equipment.

A signal generator that will provide accurately calibrated signals over the standard wave band and at the intermediate frequency and an output meter are required for indicating the effect of adjustments.

Use a non-metallic screwdriver for the adjustments. The complete procedure is as follows:

I. F. Adjustment

Set the signal generator for a signal of 175 KC.

Connect the antenna lead of the signal generator thru a .1 MF condenser to the coil end of the grid leak resistor R1. There is a lead which runs from the center tuning condenser stator to a lug at the bottom of the R. F. coil assembly. This connection can be made at the lug on the coil to which this lead is connected.

Connect the ground lead of the receiver to the ground post of the signal generator.

Turn the volume control to the maximum position.

Then adjust the three I. F. trimmers until maximum output is obtained. The adjusting screws for these condensers are reached from the top of the chassis, and the location is shown in Fig. 8.

As stated above, use a non-metallic screwdriver to make the adjustment.

1750 KC Adjustment

Set the signal generator for 1750 KC.

Turn the rotor of the tuning condenser to the full open position.

Connect the antenna lead of the receiver thru a 250 mmf. condenser to the output of the signal generator.

Keep the volume control at the maximum position.

Adjust the trimmer of the oscillator section of the three gang condenser until maximum output is obtained. The location of this trimmer is shown in Fig. 8.

1500 KC Adjustment

Set the signal generator for 1500 KC.

Turn the rotor of the tuning condenser carefully until maximum output is obtained.

Adjust the 1st detector and antenna trimmers for maximum output.

Do not change the setting of the oscillator trimmer.

Dial Calibration

To obtain dial scale calibration tune in an 800 KC signal and set the dial pointer at that mark on the dial scale. When calibrated in this manner, the setting will be approximately correct at both ends of the scale.

SPECIFICATIONS

Input Voltages
- "A" Battery . . . . . 2 Volts (.5 Amperes)
- "B" Batteries . . . . . 67½ and 135 Volts
- "C" Batteries . . . . . 4½, 9 and 22½ Volts

Power Output . . . . 1 Watt (Undistorted)

Sensitivity . . . . 15 Microvolts Absolute

Tuning Range . . . . . 530 to 1750 KC

Intermediate Frequency . . . . . 175 KC

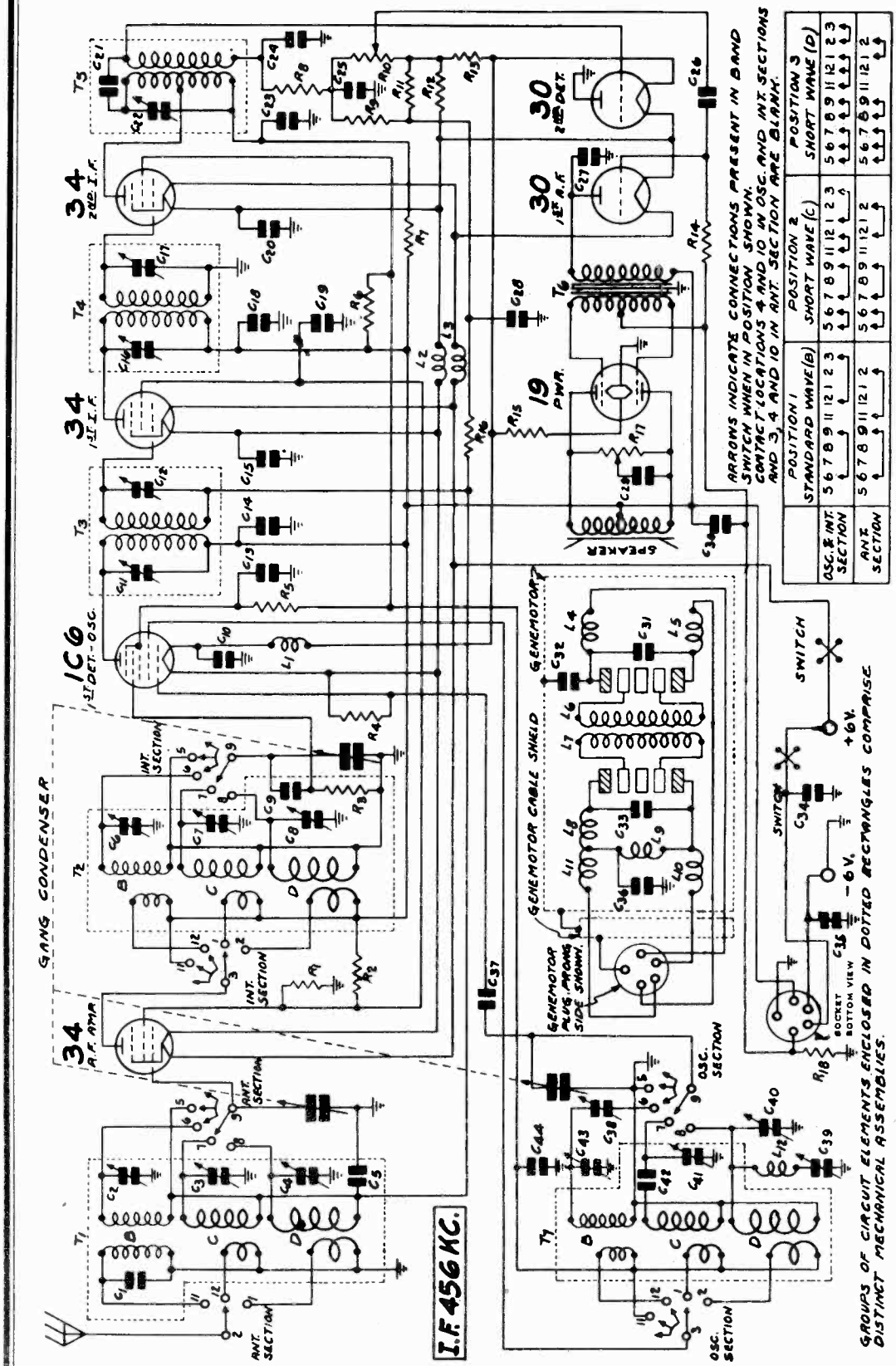
Speaker . . . . . 6" Magnetic

MODEL 27E, Ch. W420

WESTERN AIR PATROL

Power Consumption - 1.8 Amperes at 6.3 Volts
Power Output - - - - - - - 1 Watt Undistorted

Tuning Frequency Range
B Range - - - - - - - - - - 535 to 1730 KC.
C Range - - - - - - - - - - 1680 to 4800 KC.
D Range - - - - - - - - - - 5650 to 16000 KC.



C1 250 mmf.
C2 2-25 mmf.
C3 2-25 mmf.
C4 2-25 mmf.
C5 .05 mf. 180 V.
C6 2-25 mmf.
C7 2-25 mmf.
C8 2-25 mmf.
C9 35 mmf.
C10 .25 mf. 180 V.
C11 70-150 mmf. } ONE
C12 70-150 mmf. } UNIT
C13 .05 mf. 180 V.
C14 20.0 mf. 150 V. Electrolytic
C15 .25 mf. 180 V.
C16 70-150 mmf. } ONE
C17 70-150 mmf. } UNIT
C18 .50 mf. 180 V.
C19 .85 mf. 180 V.
C20 .05 mf. 180 V.
C21 50 mmf.
C22 40-100 mmf.
C23 .05 mf. 180 V.
C24 100 mmf.
C25 50 mmf.
C26 .002 mf. 600 V.
C27 250 mmf.
C28 .01 mf. 180 V.
C29 .05 mf. 240 V.
C30 20.0 mf. 150 V. Electrolytic
C31 .25 mf. 180 V.
C32 .05 mf. 180 V.
C33 .25 mf. 180 V.
C34 .25 mf. 180 V.
C35 .25 mf. 180 V.
C36 .50 mf. 180 V.
C37 35 mmf.
C38 300-600 mmf. } ONE
C39 40-100 mmf. } UNIT
C40 2-25 mmf.
C41 2-25 mmf.
C42 1400 mmf.
C43 2-25 mmf.
C44 .25 mf. 18 V.
R 1 100,000 ohm .2 W.
R 2 60,000 ohm .2 W.
R 3 1 megohm .2 W.
R 4 100,000 ohm .2 W.
R 5 5,000 ohm .2 W.
R 6 10,000 ohm .5 W.
R 7 1,000 ohm .2 W.
R 8 60,000 ohm .2 W.
R 9 3 megohm .2 W.
R10 1 megohm Vol. Control
R11 1 megohm .2 W.
R14 3 megohm .2 W.
R16 500,000 ohm .2 W.
R17 150,000 ohm Tone Control
R12 12.5 ohm 1.0 W. } ARMORED
R13 12.5 ohm 1.0 W. } WIRE-WOUND
R15 70 ohm 50 W. } RESISTOR
R18 150 ohm 2.0 W.
T 1 Ant. R. F. Trans.
T 2 Interstage R. F. Trans.
T 3 1st I. F. Trans.
T 4 2nd I. F. Trans.
T 5 3rd I. F. Trans.
T 6 Push Pull Input Trans.
T 7 Osc. Inductors
L 1 Single Filament Reactor
L 2 Double Filament
L 3 Reactor
L 4 "B" Choke
L 5 "B" Choke
L6, L7, L8 & L9 Genemotor Windings
L10 "A" Choke
L11 "A" Choke
L12 Osc. Tracking Coil

Nov., 1935

MODEL 27E, Ch: W420

WESTERN AIR PATROL

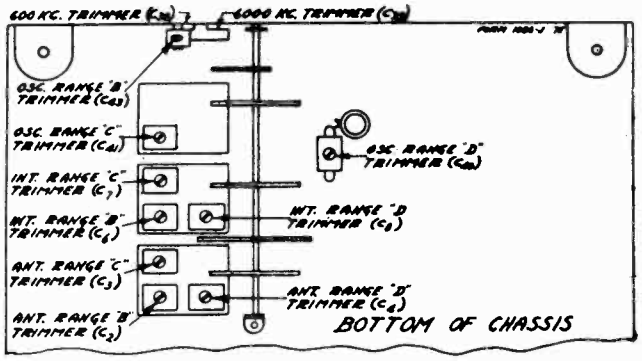


Fig. 3—Arrangement of Trimmers

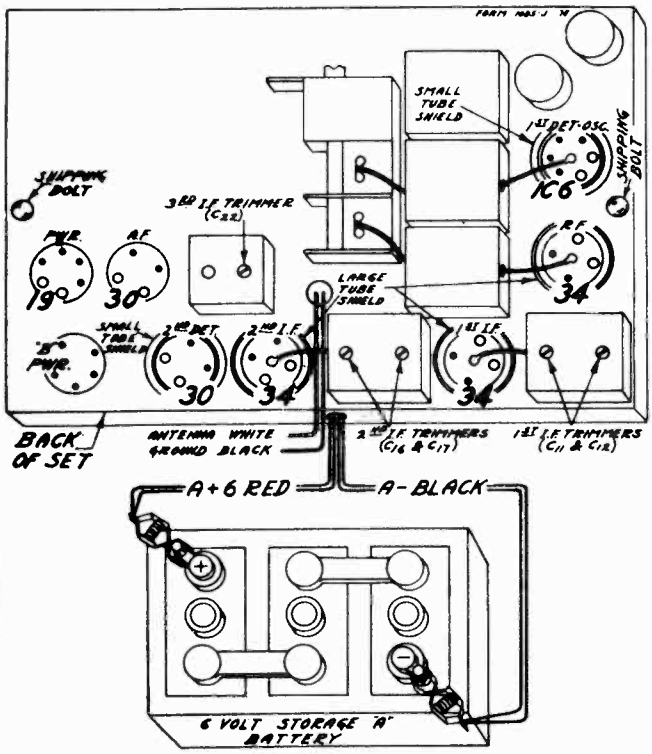


Fig. 4—Tube Arrangement and Battery Connections

VOLTAGES AT SOCKETS
Antenna Shorted to Ground—Battery 6 Volts under load
Volume Control at Maximum

Type of Tube	Function	Across Filament	Plate to Ground	Screen to Ground	Bias Voltage (see Notes)	Normal Plate M. A.
34	R. F.	2.0	135	45	1.5(1)	1.7
1C6	1st Det.	2.0	135 80(2)	70	2.0(3)	3.2 1.7(2)
34	1st I. F.	2.0	135	45	1.5(1)	1.7
34	2nd I. F.	2.0	135	80	4.0(3)	3.2
30	2nd Det.	2.0				
30	1st A. F.	2.0	135		8.0(4)	2.3
19	Power	2.0	135		3.9(5)	2.3 (per plate)

(1) As read from negative filament leg to low potential end of resistor R12.
(2) Anode Grid
(3) As read from negative filament leg to ground.
(4) Total voltage drop from negative filament leg to ground and across R18.
(5) As read across R18.

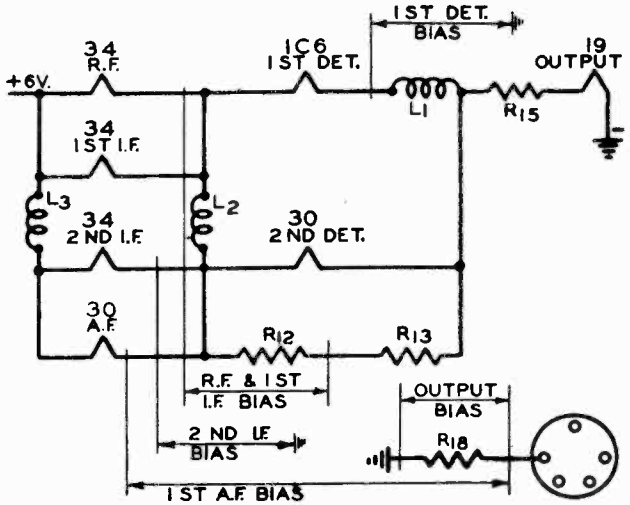


Fig. 6—Abridged Wiring Diagram showing Filament Wiring System and Points at which No-Signal Bias Voltages are obtained.

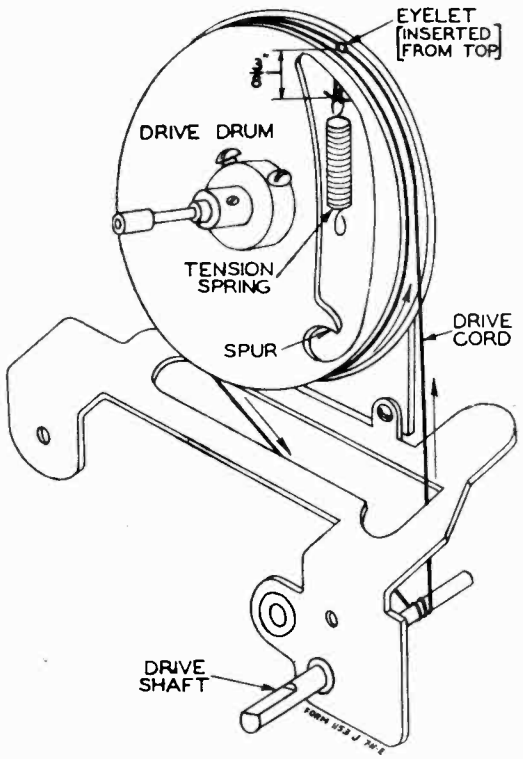


Fig. 7—Drive Cord Replacement

Battery Connections—CAUTION

CAUTION: Do not turn the switch on unless ALL the tubes are in the sockets.

CAUTION: Be sure that the battery clips are properly connected to the battery. If the connections are reversed, the receiver may be damaged.

A signal generator that will provide an accurately calibrated signal at 456, 1730, 1500, 600, 4800, 4200, 16,000, 15,000 and 6000 KC and an output indicating meter are required. It will be practically impossible to align the receiver if unsatisfactory apparatus is used.

Use a non-metallic screwdriver for the adjustments. The complete procedure is as follows:

I.F. Adjustment

Set the signal generator for a signal of 456 KC.

Connect the output of the signal generator through a 0.1 mf. condenser to the switch end of condenser C9—see Fig. 2. There is a lead which goes to the lug on the top of the center stator section of the tuning condenser—see Fig. 4. The connection can be made at this lug.

Connect the ground lead of the receiver to the ground post of the signal generator

Turn the band selector to the Range B position (standard wave band—purple dial color).

Turn the volume control to the maximum position.

Attenuate the signal from the signal generator to prevent the levelling-off action of the A.V.C.

Then adjust the five I.F. trimmers until maximum output is obtained. The adjusting screws for these condensers are reached from the top of the chassis, and the location is shown in Fig. 4.

RANGE B ALIGNMENT

1730 KC Adjustment

Set the signal generator for 1730 KC.

Turn the rotor of the tuning condenser to the full open position.

Keep the band selector in the standard wave position.

Connect the antenna lead of the receiver through a 200 mmf. condenser to the output of the signal generator.

For this and all subsequent adjustments keep the volume control at the maximum position and attenuate the signal from the signal generator to prevent A.V.C. action.

Adjust the oscillator Range B trimmer (C43) until maximum output is obtained. The location of this trimmer is shown in Fig. 3.

1500 KC Adjustment

Set the signal generator for 1500 KC.

Turn the rotor of the tuning condenser carefully until maximum output is obtained.

Loosen the pointer set screw and set the large pointer at the 1500 KC mark on the standard wave band scale. Retighten the set screw.

Adjust the interstage Range B trimmer (C6) and antenna Range B trimmer (C2) to maximum.

Do not change the setting of the oscillator Range B trimmer.

600 KC Adjustment

Set the signal generator for 600 KC.

Turn the tuning condenser rotor until maximum output is obtained.

Turn the rotor slowly back and forth at the same time adjusting the 600 KC trimmer until the peak of the greatest intensity is obtained. See Fig. 3 for location of this trimmer.

Be sure to use a non-metallic screwdriver for this adjustment.

RANGE C ALIGNMENT

4800 KC Adjustment

Set the signal generator for 4800 KC.

Connect the antenna lead of the receiver through a 400-ohm resistor to the output of the signal generator.

Turn the rotor of the tuning condenser to the full open position.

Turn the band selector to the Range C position (1st short wave band — green dial color).

As mentioned above, keep the volume control at the maximum position and attenuate the signal from the signal generator to prevent A.V.C. action.

Adjust the oscillator Range C trimmer (C41) until maximum output is obtained. See Fig. 3 for location of this trimmer.

4200 KC Adjustment

Set the signal generator for 4200 KC.

Turn the rotor of the tuning condenser carefully until maximum output is obtained.

Adjust the interstage Range C trimmer (C7) and antenna Range C trimmer (C3) to maximum.

Do not change the setting of the oscillator Range C trimmer.

RANGE D ALIGNMENT

16,000 KC Adjustment

Set the signal generator for 16,000 KC.

Keep the antenna lead of the receiver connected through the 400-ohm resistor to the output of the signal generator.

Turn the rotor of the tuning condenser to the full open position.

Turn the band selector to the Range D position (2nd short wave band—red dial color).

As mentioned above, keep the volume control at the maximum position and attenuate the signal from the signal generator to prevent A.V.C. action.

Adjust the oscillator Range D trimmer (C40) until maximum output is obtained. See Fig. 3 for location of this trimmer.

15,000 KC Adjustment

Set the signal generator for 15,000 KC.

Turn the rotor of the tuning condenser carefully until maximum output is obtained.

Adjust the interstage Range D trimmer (C8) and antenna Range D trimmer (C4) to maximum.

When adjusting the interstage Range D trimmer, it will be necessary at the same time to turn the tuning condenser rotor slowly back and forth until the peak of the greatest intensity is obtained.

Then go back and repeat the procedure as given for the 16,000 KC adjustment. If it is found necessary to make any appreciable change in the settings of the oscillator Range D trimmer, the 15,000 KC adjustment must be repeated.

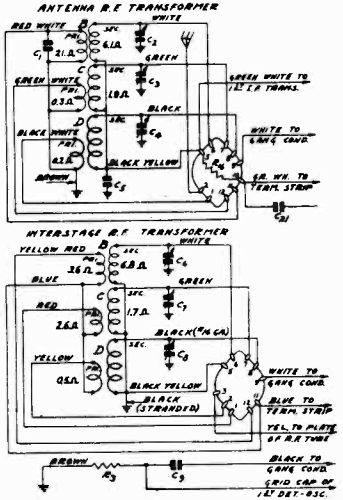
Do not make any further change in the setting of the oscillator Range D trimmer.

6000 KC Adjustment

Set the signal generator for 6000 KC.

Turn the tuning condenser rotor until maximum output is obtained.

Turn the rotor slowly back and forth at the same time adjusting the 6000 KC trimmer until the peak of greatest intensity is obtained. See Fig. 3 for location of this trimmer.



REPLACING DRIVE CORD

Remove the chassis from the cabinet. Take off the station pointer by removing the screw at the center of dial. Loosen the two set screws in the collar on the band selector switch shaft. Loosen the dial assembly by taking out the two screws which secure the bottom of this assembly to the chassis and one screw at the top which secures this assembly to the bracket. Pull the dial assembly forward until the collar is free of the band selector shaft; and lay the assembly face downward in front of the chassis.

Turn the dial drum until the opening in this drum is approximately vertical and with the hole at the top. Remove the tension spring and the old drive cord. When replacing this drive cord a 30 pound test cord as regularly supplied by the factory should be used .

See that the eyelet is in the hole in the drive drum. Insert one end of the new drive cord from the outside through the hole in the eyelet in the drive drum. Tie the end of the cord, which has been inserted through the hole, to one end of the tension spring. Now wrap the cord in a counter clock-wise direction (facing the front of the chassis) around the drive drum for approximately one and one half turns, progressing towards the front. Then tilt the chassis up on its back panel and bring the cord mentioned in the previous paragraph down to the drive shaft. Wrap it two and onehalf times around this shaft, progressing toward the back of the chassis. Wrap the cord on directly in line with the drive drum above. Then bring this cord up to the drive drum until it is up to the eyelet in the drive drum .

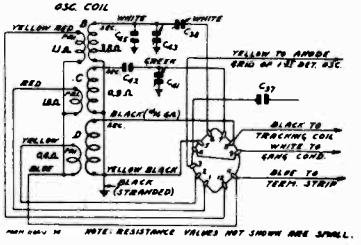
Now insert the free end of the cord through the hole in the eyelet and tie it to the end of the tension spring. The end of the spring when hanging free and with the slack taken out of the drive cord should be three eights or less from the flang of the drum. Cut off the surplus length of the cord after it has been knotted.

Now secure the other end of the tension spring over the spur on the drive drum. Turn the drive shaft back and forth several times.

Replace the dial assembly and pointer.

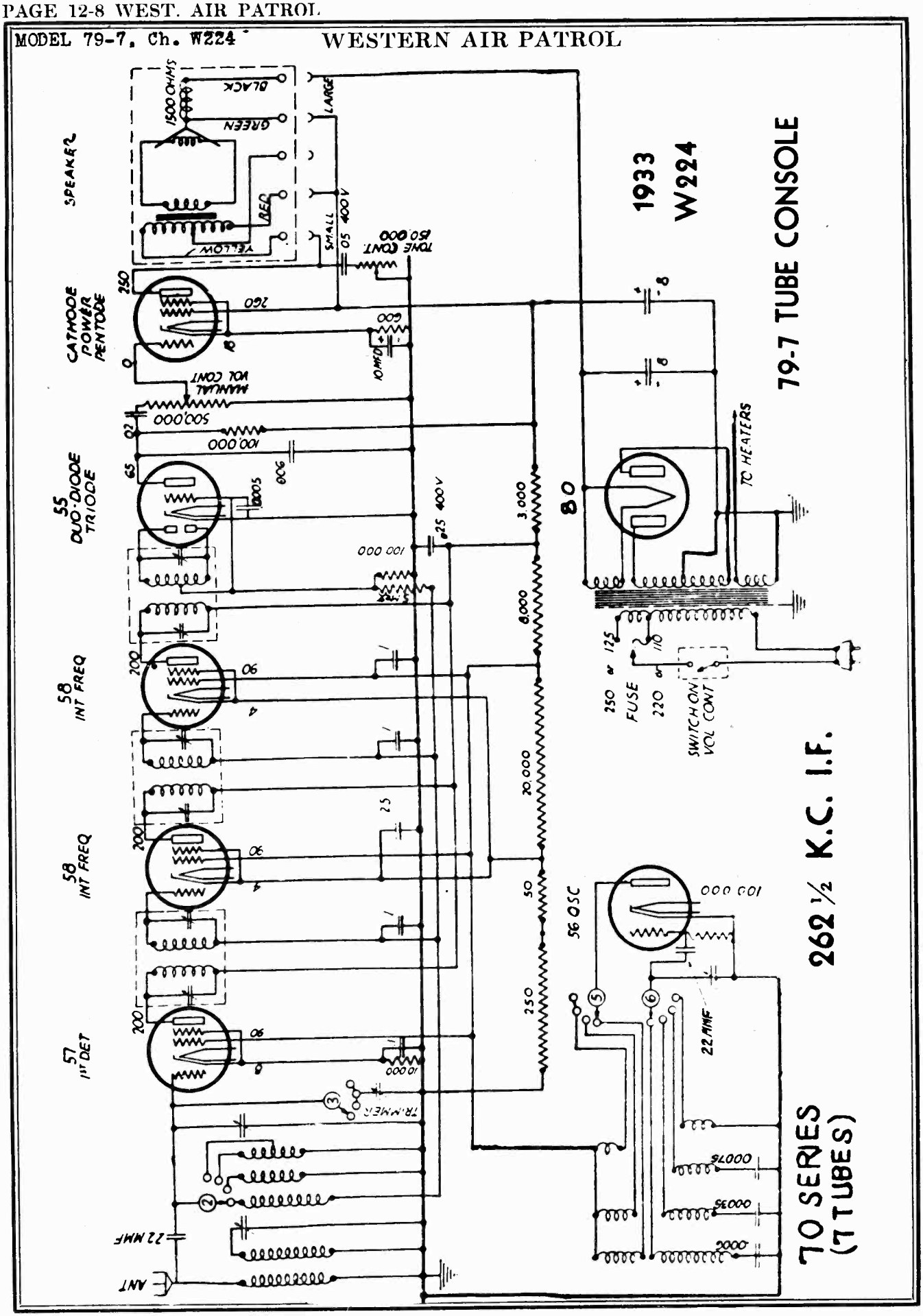
Replace the chassis in the cabinet.

Fig. 5—Color Coding of Coil Wires and D. C. Resistance of Windings. (Also see complete D. C. Resistance List Below)



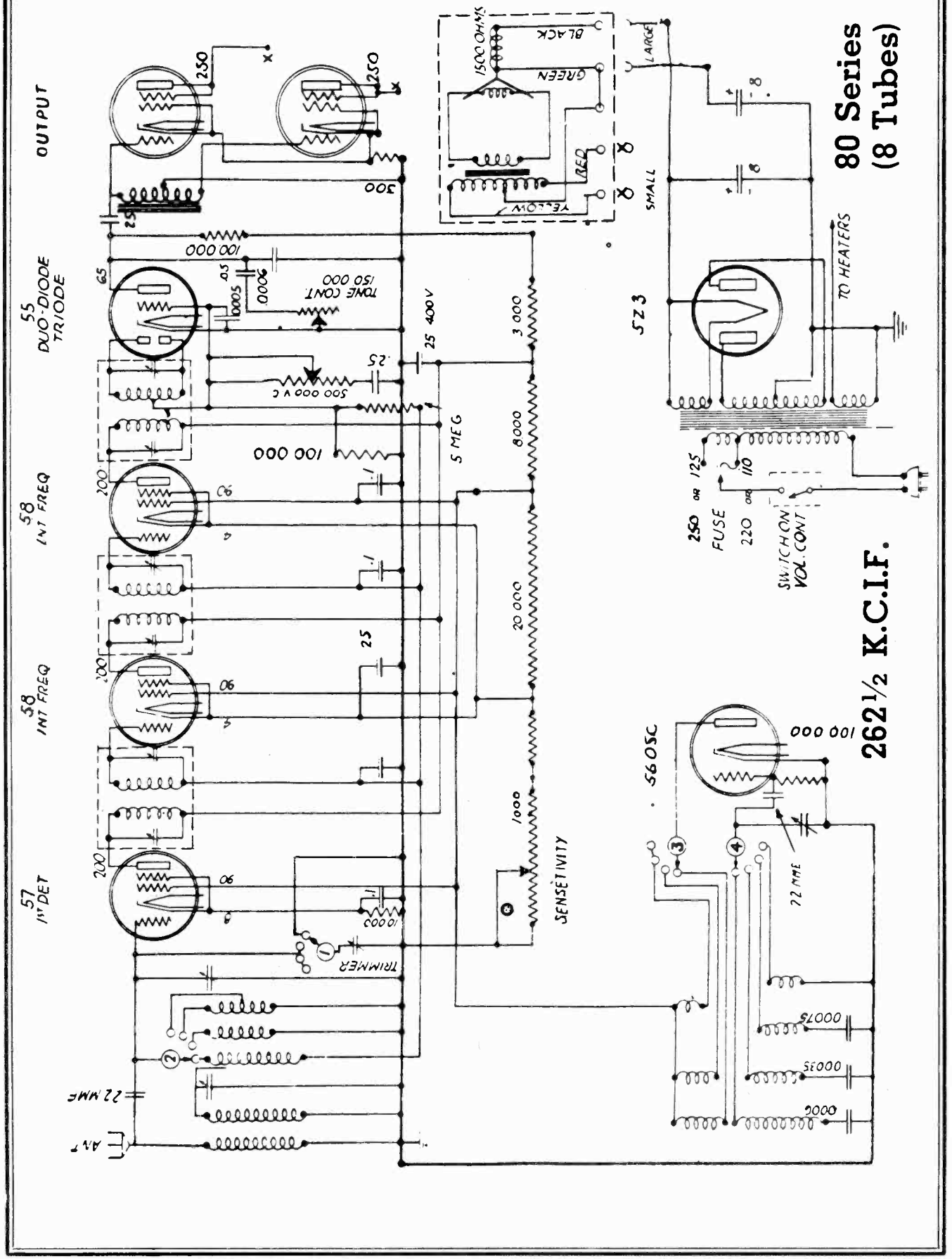
MODEL 79-7, Ch. W224

WESTERN AIR PATROL



WESTERN AIR PATROL

MODEL 79-8, Ch. W224



MODEL 79-10, Ch. W224

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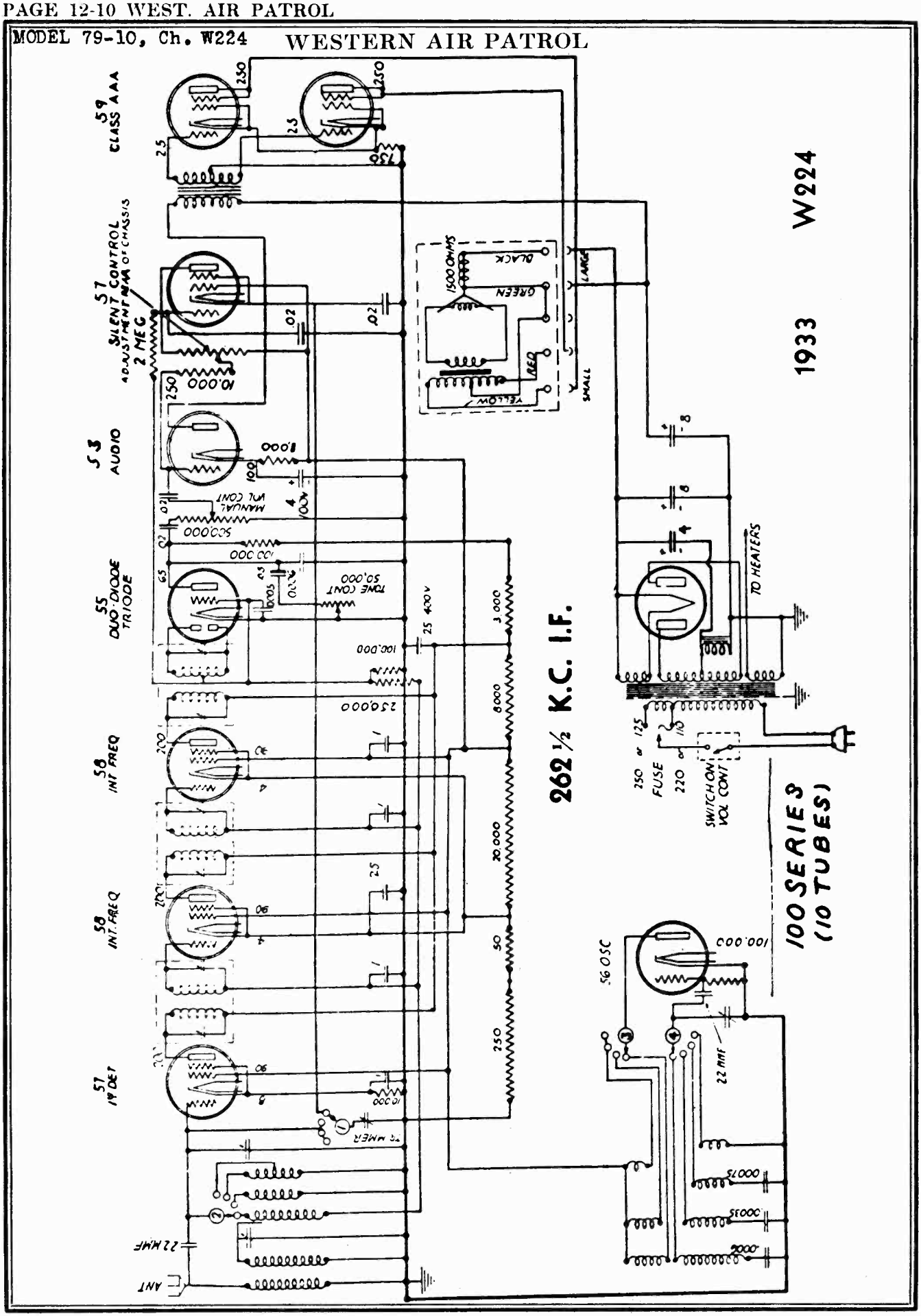
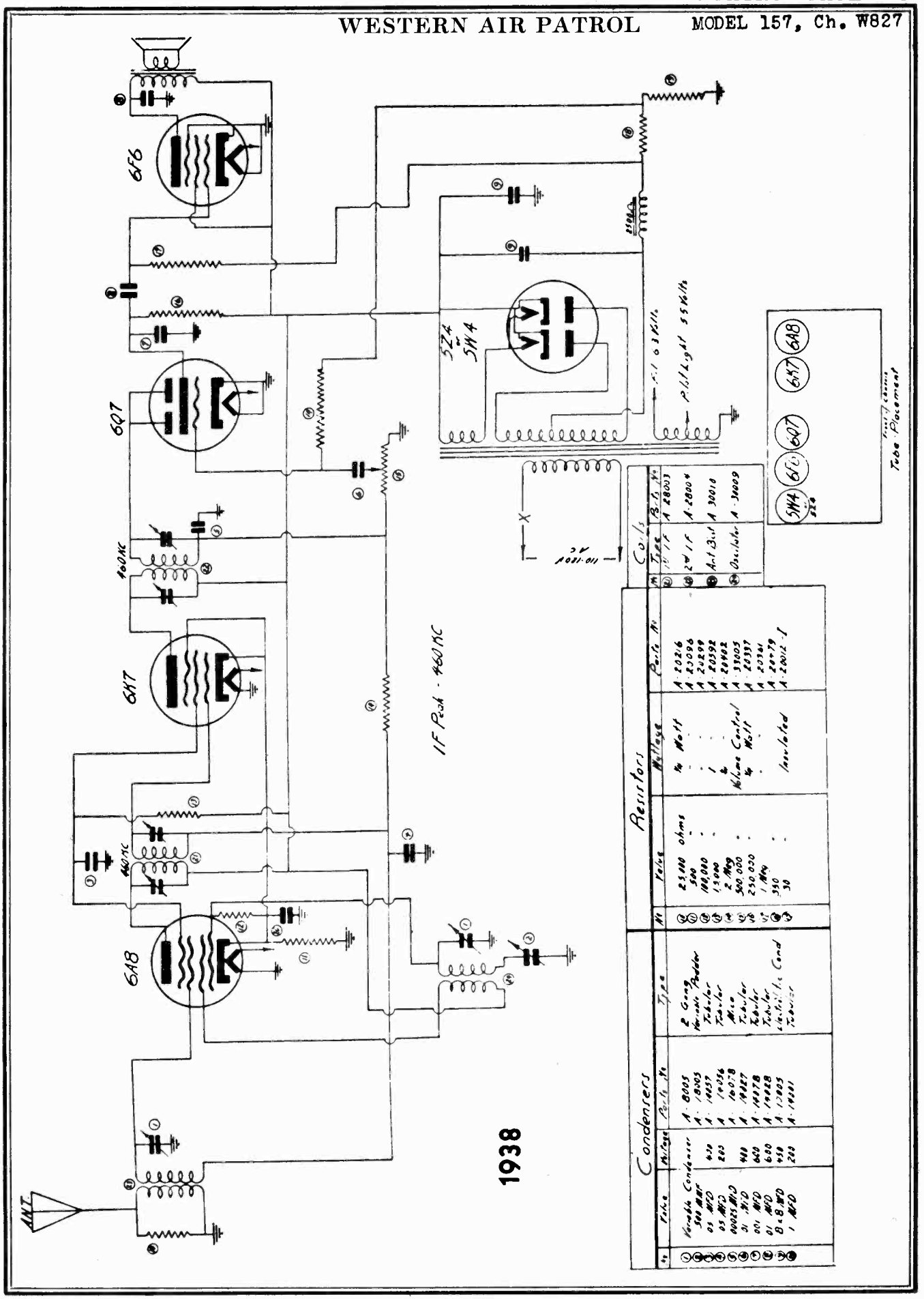


WESTERN AIR PATROL MODEL 157, Ch. W827



MODEL 257, Ch. 500

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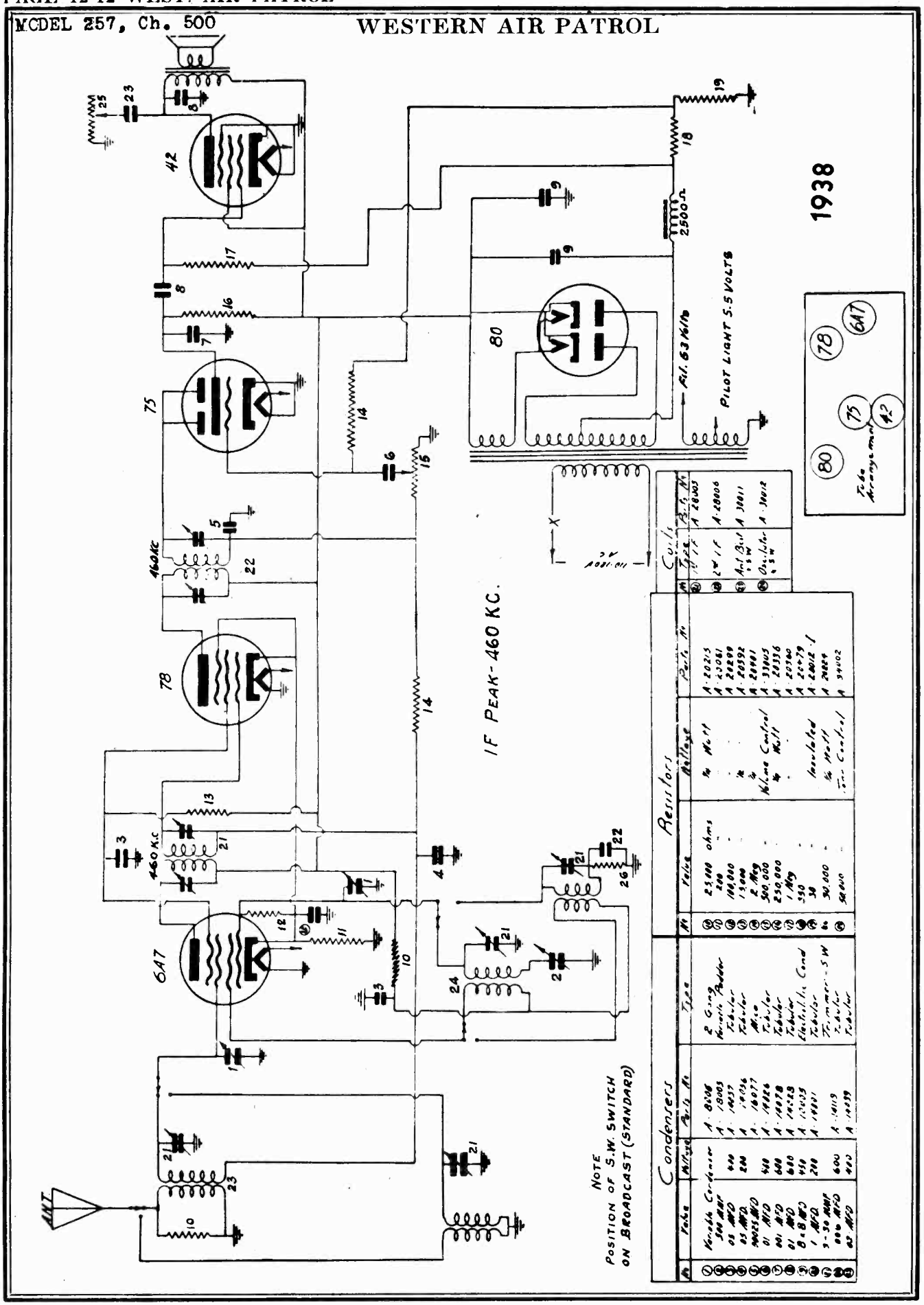
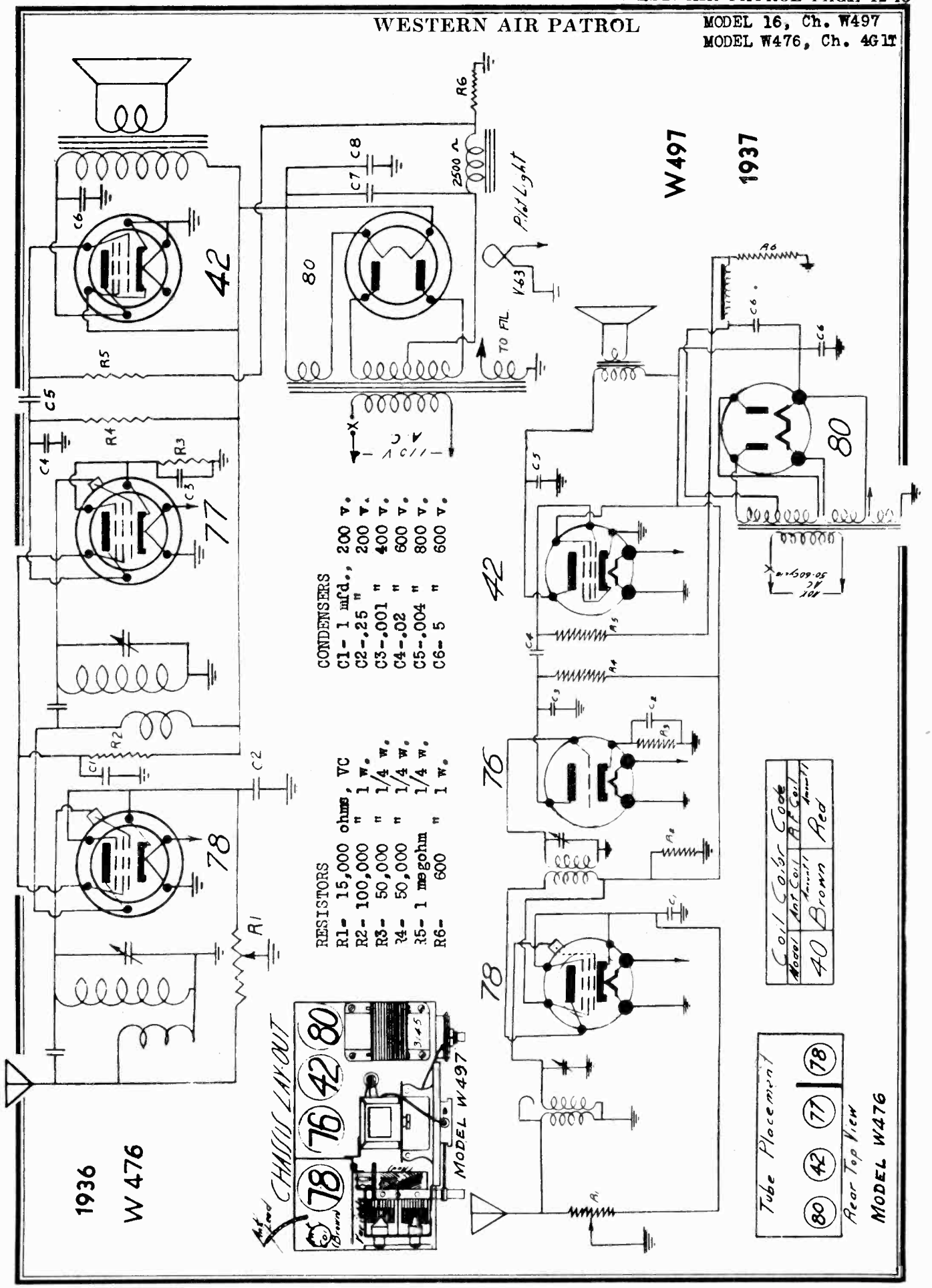


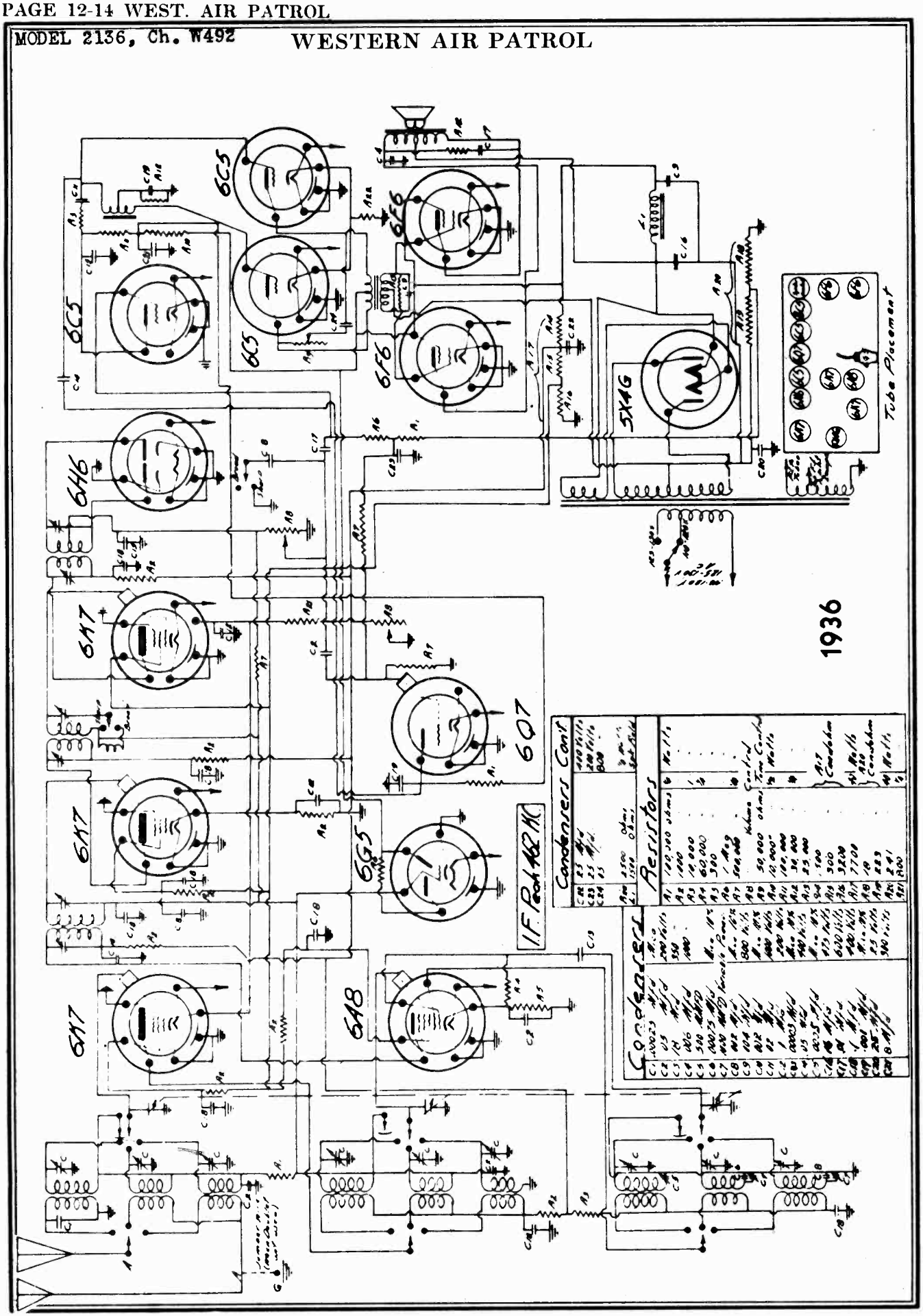
WESTERN AIR PATROL

MODEL 16, Ch. W497
MODEL W476, Ch. 4G1T



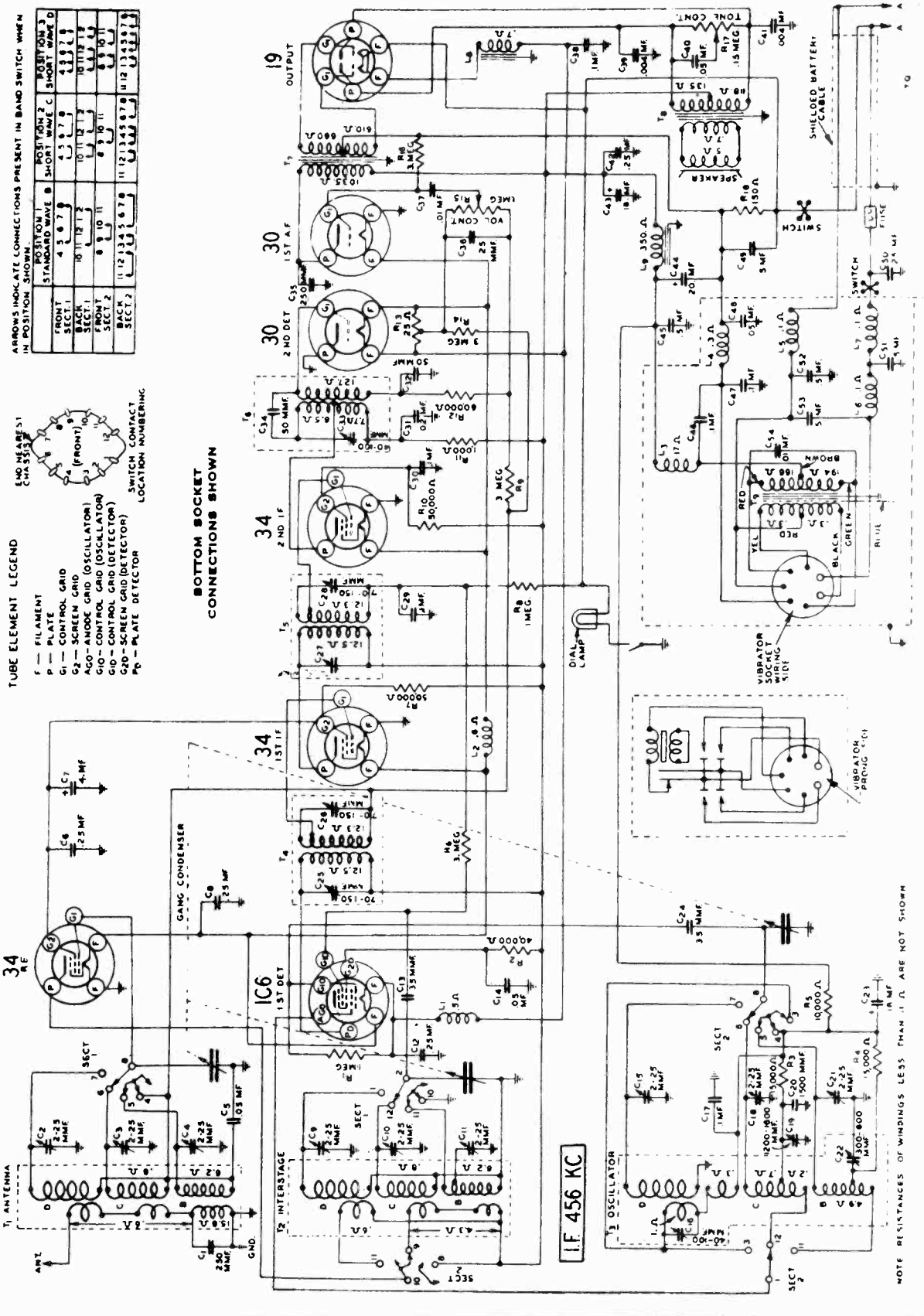
MODEL 2136, Ch. W492

WESTERN AIR PATROL



WESTERN AIR PATROL

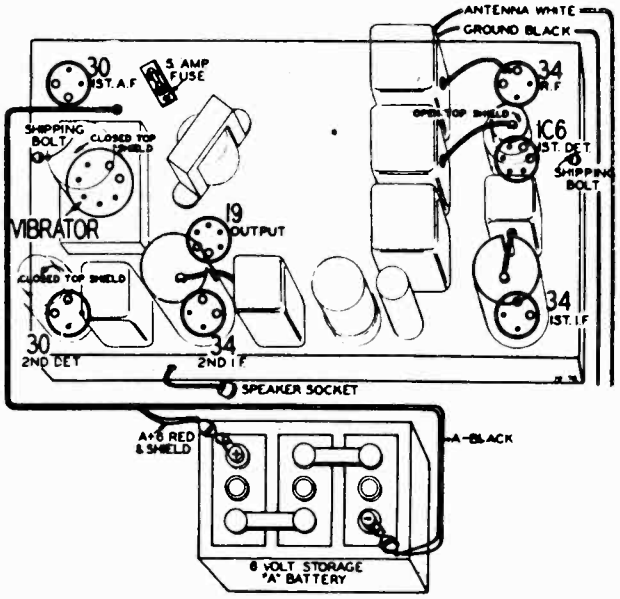
MODEL 27T, Ch. W496



FOR OTHER DATA SEE INDEX

MODEL 27T, Ch. W496

WESTERN AIR PATROL

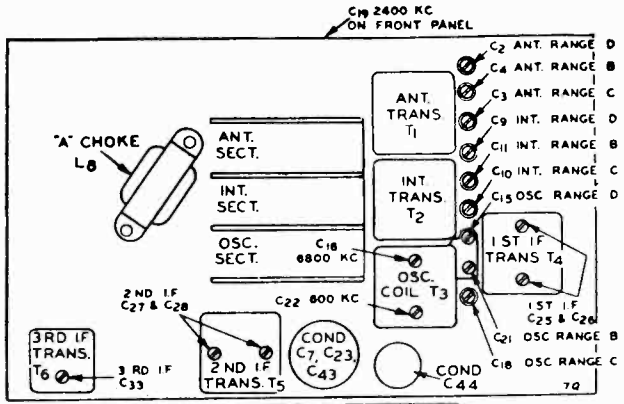


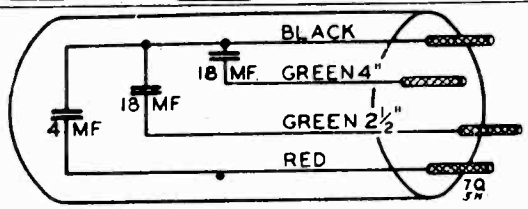
VOLTAGES AT SOCKETS

Volume Control at Maximum — Antenna Shorted to Ground
Battery - 6 Volts — Band Switch in Standard Wave Position

Type of Tube	Function	Across Filament	Plate to Ground	Screen to Ground	Bias Voltage See Notes
34	R.F.	2.0	145	55	1.0(1)
1C6	1st Det.-Osc.	2.0	145 90(2)	60	2 (3)
34	1st I.F.	2.0	145	55	1.0(1)
34	2nd I.F.	2.0	140	90	4.0(3)
30	2nd Det.	2.0			
30	1st A.F.	2.0	140		9 (4)
19	Power	2.0	140		5 (5)

(1) As read from negative filament leg to tap of resistor R13.
(2) Anode grid to ground.
(3) As read from negative filament leg to A—.
(4) Total voltage drop from negative filament leg to low potential end of resistor R18.
(5) As read across resistor R18.





Electrolytic Condenser Internal Connections

ALIGNMENT

Peak I.F. trimmers at 456 KC.
Range B-
Peak osc. trimmer (C21) at 1730 KC. Peak C11 and C4 at 1500 KC. Pad C22 at 600 KC.
Range C-
Peak C18 at 6700 KC.
Peak C3 and C10 at 6000 KC.
Pad C19 at 2400 KC.
Range D-
Peak C15 at 18,400 KC.
Peak C9 and C2 at 15,000 KC.
Pad C16 at 6800 KC.

NOTE

When adjusting interstage and antenna trimmers, rock gang condenser rotor until peak is obtained.

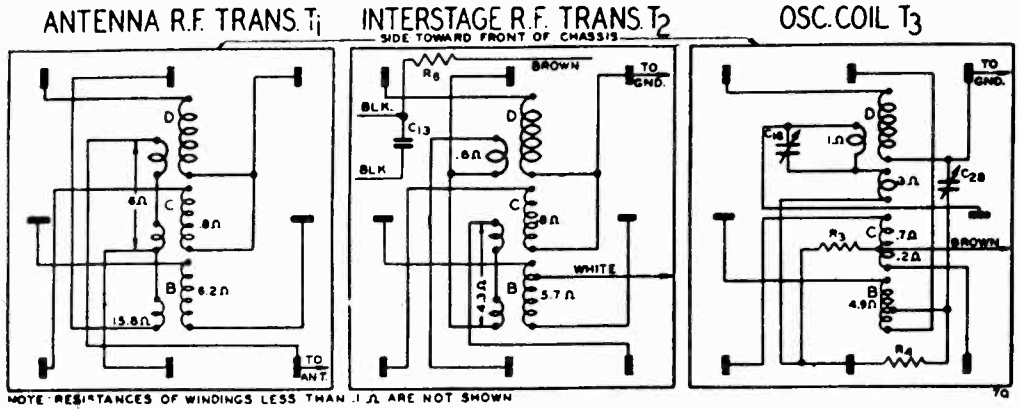
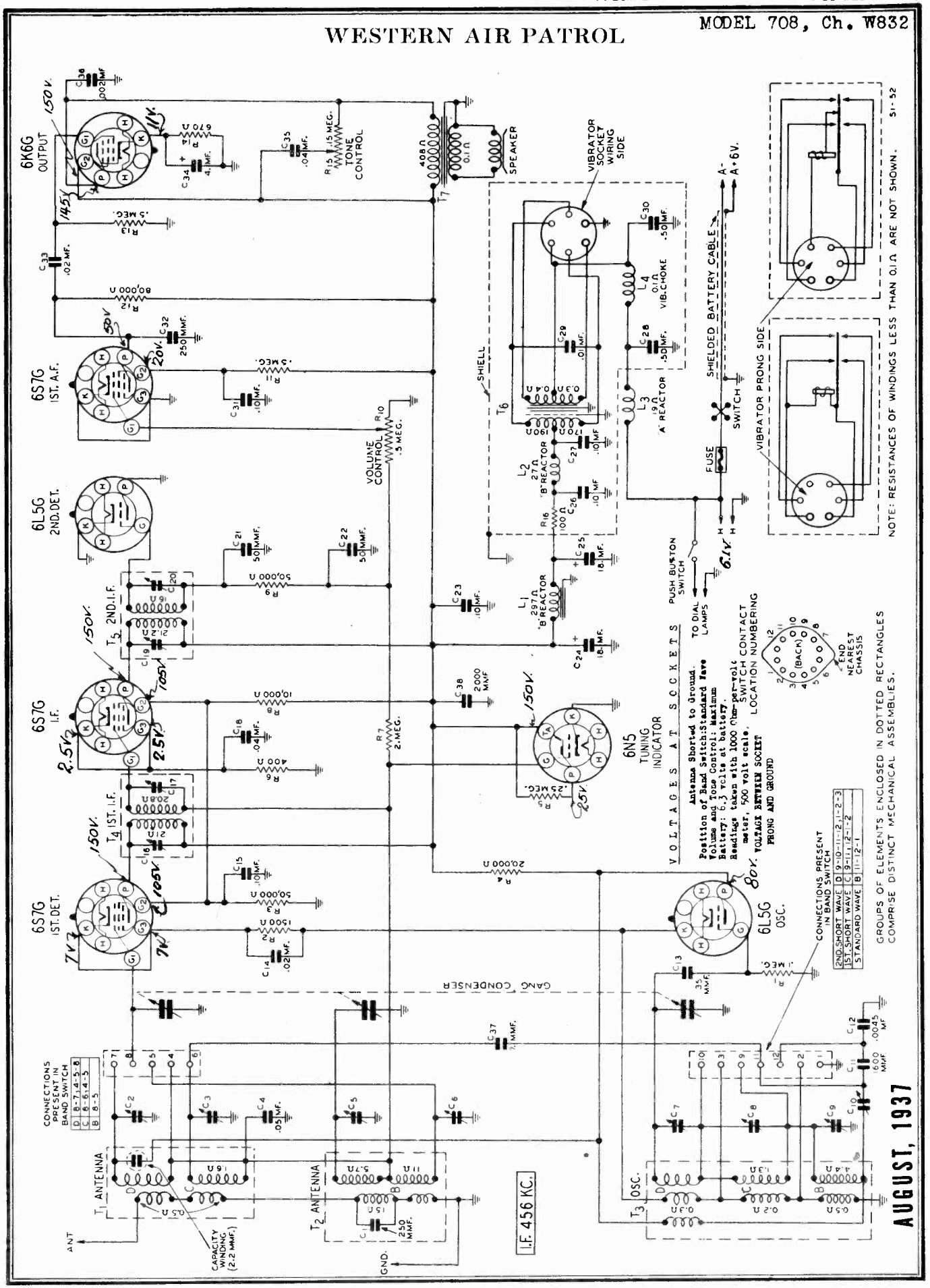


Fig. 7. R.F. and Oscillator Coil Base Terminal Arrangement and D. C. Resistance of Windings

WESTERN AIR PATROL

MODEL 708, Ch. W832



MODEL 708, Ch.832
MODEL 56, Ch. W485

WESTERN AIR PATROL

MOD. 708 ALIGNMENT PROCEDURE W832

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., 200 mmf., and 400 ohms.

STEP (Follow Order as Given)	BAND SWITCH SETTING	DUMMY ANTENNA	SIGNAL GENERATOR FREQUENCY SETTING	SIGNAL GENERATOR CONNECTION AT RADIO	TRIMMERS ADJUSTED See Illustration	PROCEDURE INITIAL STEPS	PROCEDURE ADJUSTMENT
I. F.							
2nd I.F. Adj.	Range B	.1 mf.	456 KC	Grid of I.F. Tube	2nd I.F. (C19) & (C20)	Turn Rotor to Full Open	Adjust to Maximum Output
1st I.F. Adj.	Range B	.1 mf.	456 KC	Grid of 1st Det.	1st I.F. (C16) & (C17)	Turn Rotor to Full Open	Adjust to Maximum Output
RANGE D							
22,000 KC	Range D	400 Ohm	22,000 KC	Antenna Lead	Oscillator Range D (C7)	Turn Rotor to Full Open	Adjust to Maximum Output
20,000 KC	Range D	400 Ohm	20,000 KC	Antenna Lead	Antenna Range D (C2)	Turn Rotor to Max. Output	Adjust to Maximum Output Rock Rotor — See Note B
RANGE C							
6350 KC	Range C	400 Ohm	6350 KC	Antenna Lead	Oscillator Range C (C8)	Turn Rotor to Full Open	Adjust to Maximum Output
6000 KC	Range C	400 Ohm	6000 KC	Antenna Lead	Antenna Range C (C3)	Turn Rotor to Max. Output	Adjust to Maximum Output
RANGE B							
1830 KC	Range B	200 mmf.	1830 KC	Antenna Lead	Oscillator Range B (C9)	Turn Rotor to Full Open	Adjust to Maximum Output
1500 KC	Range B	200 mmf.	1500 KC	Antenna Lead	1st Ant. Range B (C5) 2nd Ant. Range B (C6)	Turn Rotor to Max. Output Set Indicator to 1500 KC— See Note A	Adjust to Maximum Output
600 KC	Range B	200 mmf.	600 KC	Antenna Lead	600 KC (C10)	Turn Rotor to Max. Output	Adjust to Maximum Output Rock Rotor — See Note B

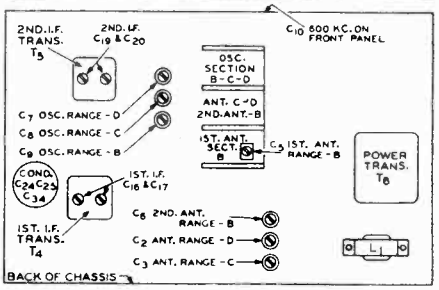
Attenuate the signal from the signal generator to prevent the leveling-off action of the AVC.

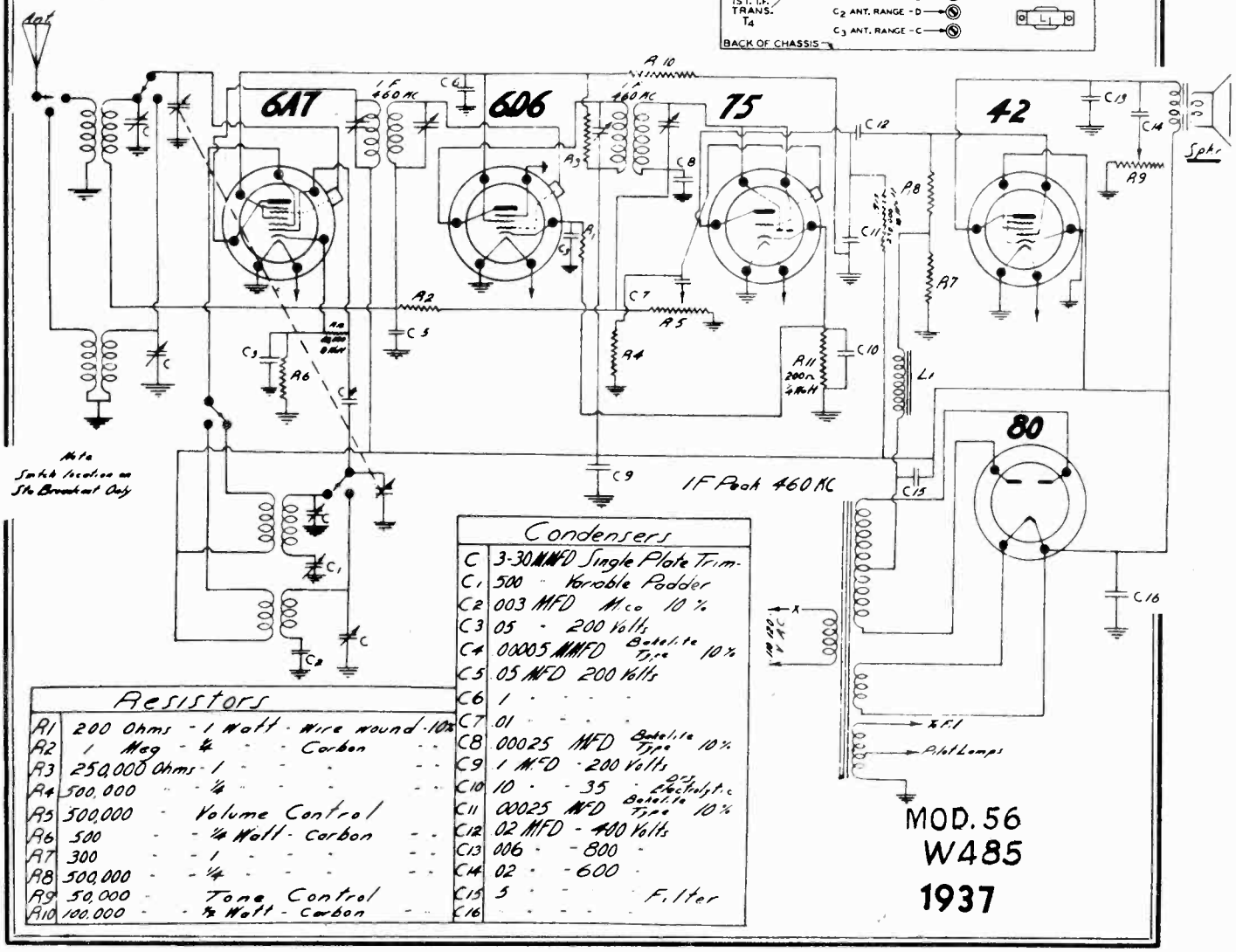
After each range is completed, repeat the procedure as a final check.

NOTE A—Loosen the pointer set screw and set the pointer at the 1500 KC mark on the standard wave band scale. Retighten the set screw.

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

CAUTION—When aligning the short wave bands, be sure NOT to adjust at the image frequency. This can be checked as follows: Let us say the signal generator is set for 5000 KC. The signal will then be heard at 5000 KC on the dial of the radio. The image signal, which is much weaker, will be heard at 5000 less 912 KC, or 4088 KC on the dial. It may be necessary to increase the input signal to hear the image





Resistors

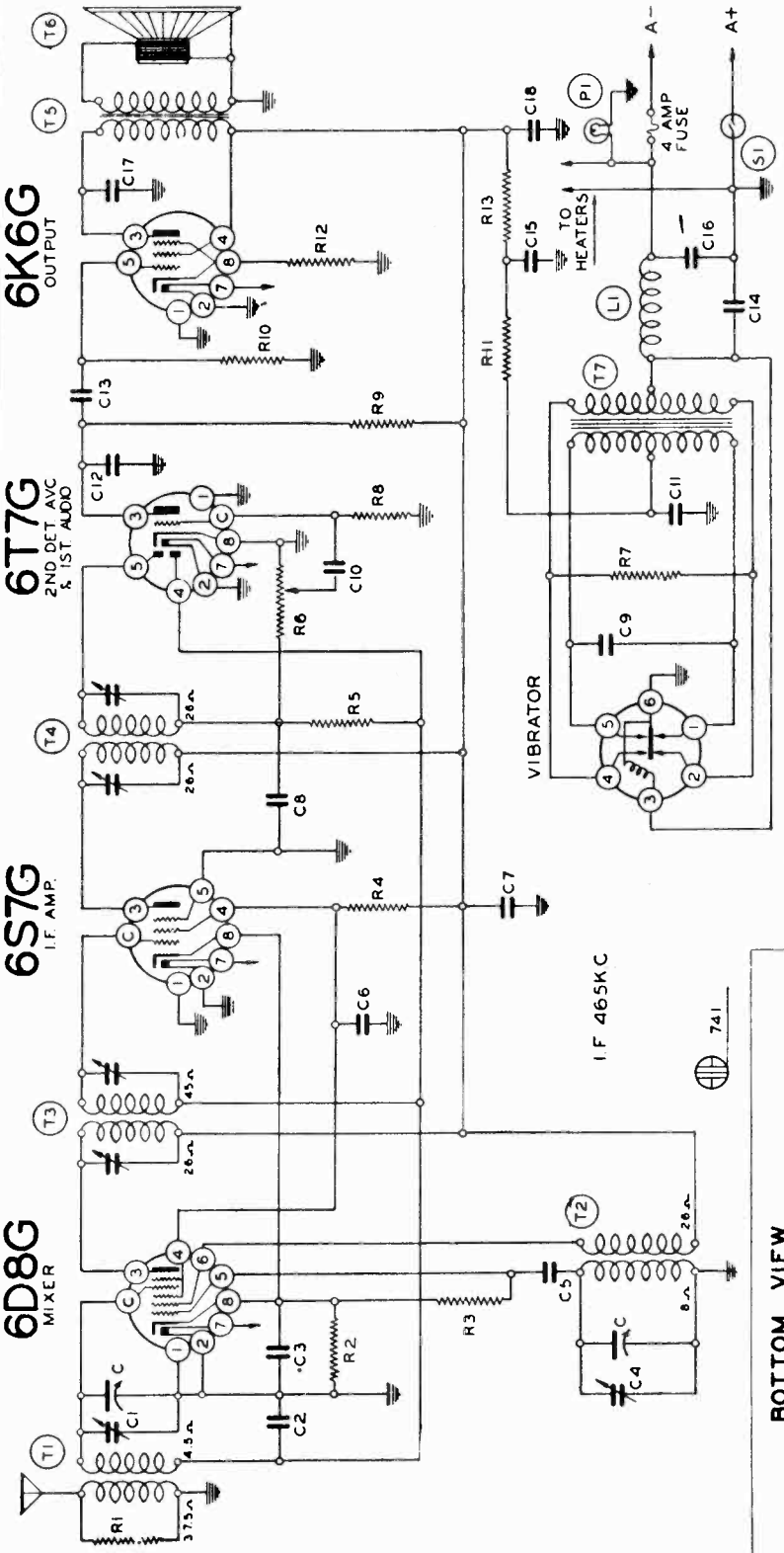
R1	200 Ohms	1 Watt - Wire wound - 10%
R2	1 Meg	½ - Carbon
R3	250,000 Ohms	1 -
R4	500,000	½ -
R5	500,000	Volume Control
R6	500	½ Watt - Carbon
R7	300	1 -
R8	500,000	½ -
R9	50,000	Tone Control
R10	100,000	½ Watt - Carbon

Condensers

C	3-30 MMFD Single Plate Trim.
C1	500 - Variable Padder
C2	.003 MFD Mica 10 %
C3	.05 - 200 Volts
C4	.00005 MMFD Bakelite Type 10%
C5	.05 MFD 200 Volts
C6	1 -
C7	.01 -
C8	.00025 MFD Bakelite Type 10%
C9	1 MFD - 200 Volts
C10	10 - - 35 - Electrolytic
C11	.00025 MFD Bakelite Type 10%
C12	.02 MFD - 400 Volts
C13	.006 - - 800 -
C14	.02 - - 600 -
C15	5 - - - Filter
C16	- - - -

WESTERN AUTO SUPPLY CO.

MODEL D723



Circuit Diagram Reference	Part No.	Description
		RESISTORS
R1	13017	10M ohm—½ w.
R2	130239	250 ohm—½ w.
R3	13012	50M ohm—½ w.
R4	130263	12M ohm—½ w.
R5	1304	3 megohm—½ w.
R6	101106	1 megohm—volume control
R7	13084	200 ohm—½ w.
R8	130225	15 megohm—½ w.
R9	13011	250M ohm—½ w.
R10	13019	1 megohm—½ w.
R11	130231	75 ohm—½ w.
R12	13070	500 ohm—½ w.
R13	130199	1500 ohm—1 watt
		CONDENSERS
C	10271B	2 gang variable condenser
C1	1009	Antenna Trimmer
C2	10020	.05 x 200 v.
C3	10020	.1 x 200 v.
C4		Oscillator Trimmer
C5	12912	.00025 mica
C6	10020	.1 x 200 v.
C7	10020	.1 x 200 v.
C8	1295	.0001 mica
C9	10068	.003 x 1400 v.
C10	10019	.006 x 600 v.
C11	10020	.1 x 200 v.
C12	1292	.0005 mica
C13	10011	.01 x 400 v.
C14	10040	.5 x 120 v.
C15	11959C	30 mid.—150 w. v. lytic
C16	10040	.5 x 120 v.
C17	10019	.006 x 600 v.
C18	11959C	10 mid. 150 w. v. lytic
		PARTS
T1	11185B	Antenna Coil
T2	110103	Oscillator Coil
T3	10896E	Input I.F.—465 kc.
T4	10895E	Output I.F.—465 kc.
T5	10582	Output Transformer
T6	114142	5" P. M. Speaker
T7	104137C	Power Transformer
L1	10568	"A" Choke
P1	10789	6-8 v. pilot light
S1		Off-on switch on volume control

BOTTOM VIEW OF CHASSIS

VOLTAGES MEASURED WITH 1000 OHM PER VOLT VOLTMETER BETWEEN SOCKET TERMINALS AND CHASSIS.

A—CANNOT BE MEASURED WITH VOLTMETER

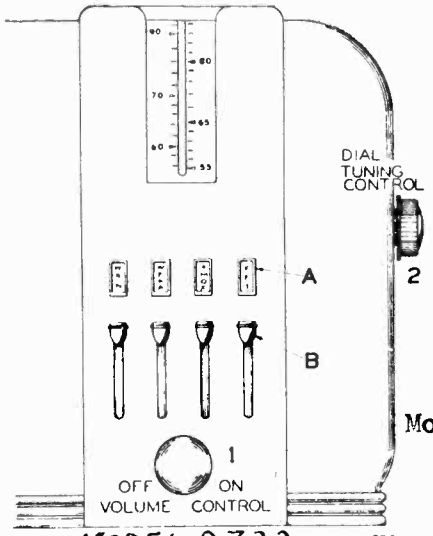
Fig 3

Broadcast Band 6-Volt Storage Battery Operated Superheterodyne Receiver

WITH FOUR BUTTON AUTO-TUNER

Frequency Range—535 - 1735 Kilocycles

Nov. 1938



MODEL D723

FIG. 2—FRONT VIEW

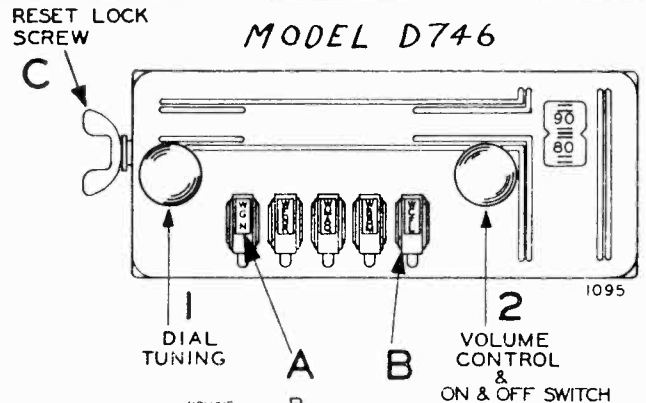
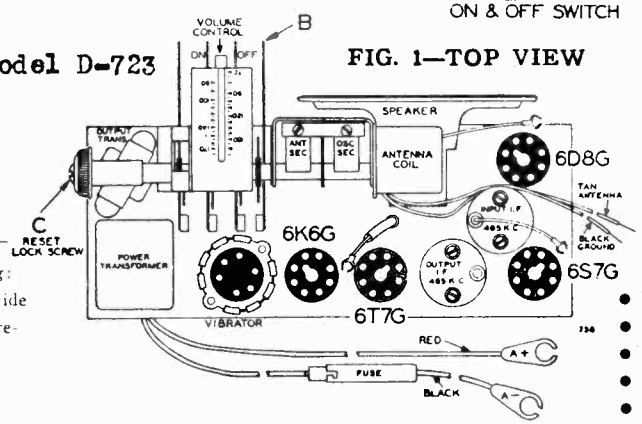


FIG. 1—TOP VIEW

Model D-723



PROCEDURE FOR SETTING THE AUTOMATIC LEVERS:

There are four levers on the dial by means of which four stations may be selected, (See "B" Fig. 2).

Above each automatic tuner lever an opening in the escutcheon is provided for inserting the call letter tabs, (See "A" Fig. 2.)

Press DOWN ALL THE WAY any one of the automatic tuner levers. Holding it down FIRMLY, tune in by means of the tuning knob (No. 2) the station indicated on the station call letter tab above this lever. Turn the tuning knob very slowly back and forth (while still holding lever in downward position) until the signal is clearest. The station will then be accurately tuned in. Release the lever.

Now rotate the tuning knob (No. 2) to the right (clockwise) as far as it will turn and with a coin (half dollar) tighten the special locking screw ("C") in the center of the tuning knob, (See Fig. 2).

It is VERY IMPORTANT that this locking screw is turned until it is ABSOLUTELY TIGHT.

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., 200 mmf

- Volume control—Maximum all adjustments.
- Connect radio chassis to ground post of signal generator with a short heavy lead.
- Connect dummy antenna value in series with generator output lead.
- Connect output meter across primary of output transformer.
- Allow chassis and signal generator to "heat up" for several minutes.

Model D-723 ALIGNMENT PROCEDURE

BAND	SIGNAL GENERATOR Frequency Setting	Dummy Antenna	Connection to Radio	Variable Condenser Setting	Trimmers Adjusted (in Order Shown)	Trimmer Function	Adjustment
I. F.	465 Kc.	.1 MFD.	Grid of 6S7G I. F. Tube	Rotor full open (Plates out of mesh)	Two trimmers on top (See Fig. 1)	Output I. F.	Adjust to maximum output
	465 Kc.	.1 MFD.	Grid of 6D8G	Rotor full open (Plates out of mesh)	Two trimmers on top (See Fig. 1)	Input I. F.	Adjust to maximum output
BROAD-CAST BAND	1735 Kc.	200 mmf.	Antenna lead	Rotor full open (Plates out of mesh)	Trimmer—Top of rear section of gang (See Fig. 1)	Broadcast Oscillator	Adjust to maximum output
	1400 Kc.	200 mmf.	Antenna lead	Set dial at 1400 Kc.	Trimmer—Top of front section of gang (See Fig. 1)	Antenna Broadcast	Adjust to maximum output

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

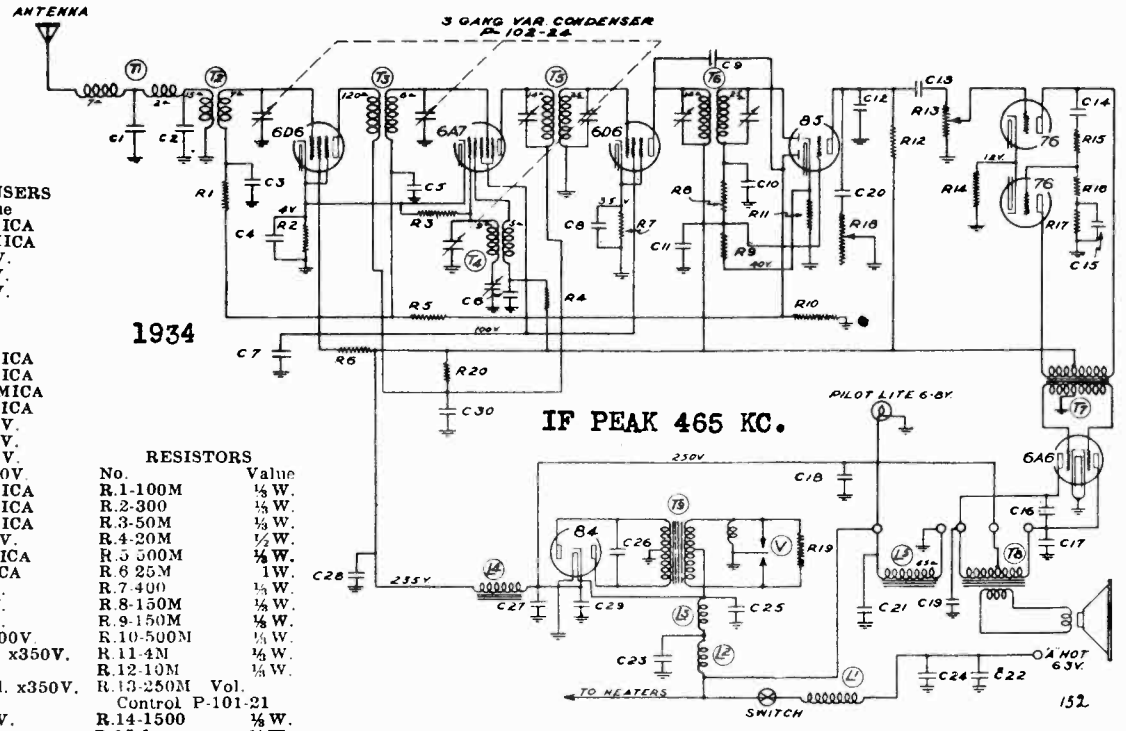
After each band is completed, repeat the procedure as a final check.

FREQUENCY RANGE
535 to 1735KC.

Power Consumption.....2.1 Amperes at 6.3 Volts
Power Output.....350 Milliwatts Undistorted, 800 Milliwatts Maximum
Intermediate Frequency.....465 KC.

WESTERN AUTO SUPPLY CO.

MODEL S-741



CONDENSERS

No.	Value
C.1-	.00009 MICA
C.2-	.00002 MICA
C.3-	.01x400V.
C.4-	.25x200V.
C.5-	.05x200V.
C.6-	.1x200V.
C.7-	.1x200V.
C.8-	.1x200V.
C.9-	.00002 MICA
C.10-	.0001 MICA
C.11-	.00005 MICA
C.12-	.0001 MICA
C.13-	.02x400V.
C.14-	.02x400V.
C.15-	.01x400V.
C.16-	.006x600V.
C.17-	.0005 MICA
C.18-	.0005 MICA
C.19-	.0005 MICA
C.20-	.05x400V.
C.21-	.0005 MICA
C.22-	.002 MICA
C.23-	.5x120V.
C.24-	.5x120V.
C.25-	.5x120V.
C.26-	.015x1400V.
C.27-	8.0 mfd. x350V. P-119-16
C.28-	12.0 mfd. x350V. P-119-16
C.29-	.01x400V.
C.30-	.1x400V.
117-2	Dash Mounting Bracket
117-1	Bracket Steering Column
Dash	Mounting Assembly

RESISTORS

No.	Value
R.1-	100M ⅓ W.
R.2-	300 ⅓ W.
R.3-	50M ⅓ W.
R.4-	20M ½ W.
R.5	500M ⅓ W.
R.6	25M 1W.
R.7-	400 ⅓ W.
R.8-	150M ⅓ W.
R.9-	150M ⅓ W.
R.10-	500M ⅓ W.
R.11-	4M ⅓ W.
R.12-	10M ⅓ W.
R.13-	250M Vol. Control P-101-21
R.14-	1500 ⅓ W.
R.15-	1 meg ⅓ W.
R.16-	91M ⅓ W.
R.17-	75M ⅓ W.
R.18-	100M Tone Control P-101-39
R.19-	200 ⅓ W.
R.20-	1500 ⅓ W.

PARTS

No.	Part No.
T1-Antenna Filter	P-111-43
T2-Antenna Coil	P-111-42
T3-R.F. Coil	P-109-20
T4-Oscillator Coil	P-110-34
T5-Input I.F. Coil	P-108-56
T6-Output I.F. Coil	P-108-57
T7-Audio Trans.	P-105-13
T8-Output Trans.	
T9-Power Trans.	P-104-21
L1-"A" Choke	P-105-18
L2-"A" Choke	P-105-18
L3-"A" Choke	P-105-19
L4-Filter Choke	P-105-11
L5-Speaker Field	
V-Vibrator	142-4

DUMMY ANTENNAS:

The dummy antennas referred to in the following instructions are:

"I.F. Dummy" —A .1 mfd. condenser connected in series with the test oscillator output lead.

"Broadcast Dummy"—A 200 mmfd. condenser connected in series with the output lead of the test oscillator.

RESONANCE INDICATOR:

Use as a resonance indicator an output meter connected across the primary of the speaker input transformer, or by means of an adapter between the two plates of the type 6A6 output tube. Maximum deflection of the meter indicates resonance. Use only enough signal to get a readily readable output. A low range output meter or the low scale of a multi-range meter should be used.

I.F. ALIGNMENT: Series A & B

1. With variable condenser in its minimum capacity position (plates entirely out of mesh) and with volume control full on, connect test oscillator set at 175 K.C., in series with I.F. dummy antenna, to the grid cap of the type 6A7 tube.
2. Adjust trimmer condensers of both input (108-33) and output (108-34) I.F. transformers to resonance with oscillator. See top view for location of these transformers. There are two adjustments on each and they are accessible from the top of the transformer shield and should be adjusted with an insulated screw driver.

BROADCAST ALIGNMENT:

1. With variable condenser in its minimum capacity position, connect test oscillator set at 1550 K.C. and in series with broadcast dummy, to the antenna lead of receiver.
2. Adjust oscillator trimmer of variable condenser to resonance (this adjustment is on the end section of the three gang condenser—see top view).
3. Shift test oscillator to 1400 K.C. and pick up signal by rotating condenser and adjust R.F. (center) and antenna (front) trimmers to resonance, see top view.
   (a) Check for sensitivity at 1000, 800 and 600 K.C. by setting test oscillator to these frequencies and picking up the signal by rotating variable condenser. Under no circumstances bend plates of oscillator section, bend R.F. and antenna plates only if absolutely necessary.

I.F. ALIGNMENT: Series C

1. With variable condenser in its minimum capacity position (plates entirely out of mesh) and with volume control full on, connect test oscillator set at 465 K.C., in series with I.F. dummy antenna, to the grid cap of the type 6A7 tube.
2. Adjust trimmer condensers of both input (108-56) and output (108-57) I.F. transformers to resonance with oscillator. See top view for location of these transformers. There are two adjustments on each and they are accessible from the top of the transformer shield and should be adjusted with an insulated screw driver.

BROADCAST ALIGNMENT:

1. With variable condenser in its minimum capacity position, connect test oscillator set at 1550 K.C. and in series with broadcast dummy, to the antenna lead of receiver.
2. Adjust oscillator trimmer of variable condenser to resonance (this adjustment is on the end section of the three gang condenser—see top view).

SERVICE NOTES:

Voltages taken from different points of circuit to chassis are measured with volume control full on, all tubes in their sockets and speaker connected, with a volt meter having a resistance of 1000 ohms per volt. These voltages are clearly indicated on the circuit diagram.

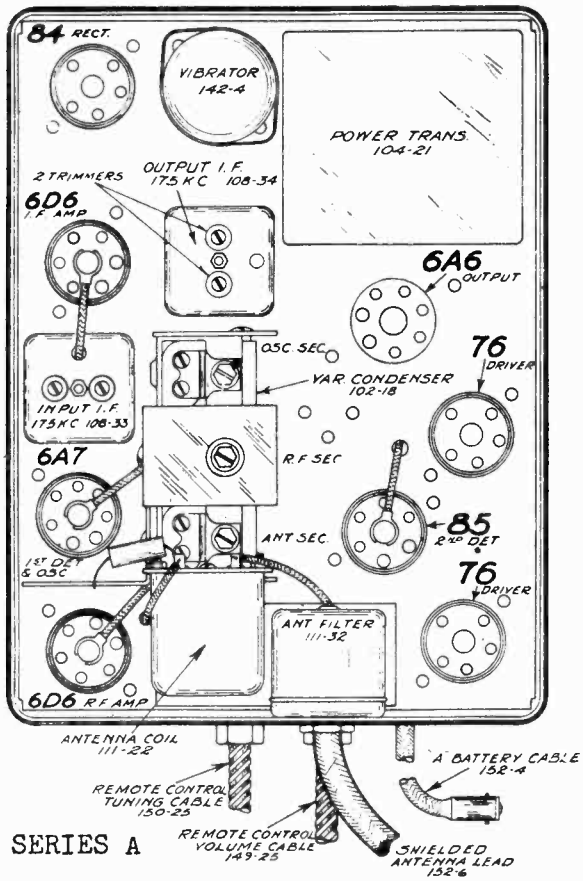
In order to prevent signal from acting upon A.V.C. and affecting accuracy of voltage measurements, aerial and ground leads should be short circuited while making measurements.

All voltages are to be measured with 6.3 volts input to receiver. Resistances of coils and transformer windings are indicated in ohms on schematic circuit diagram.

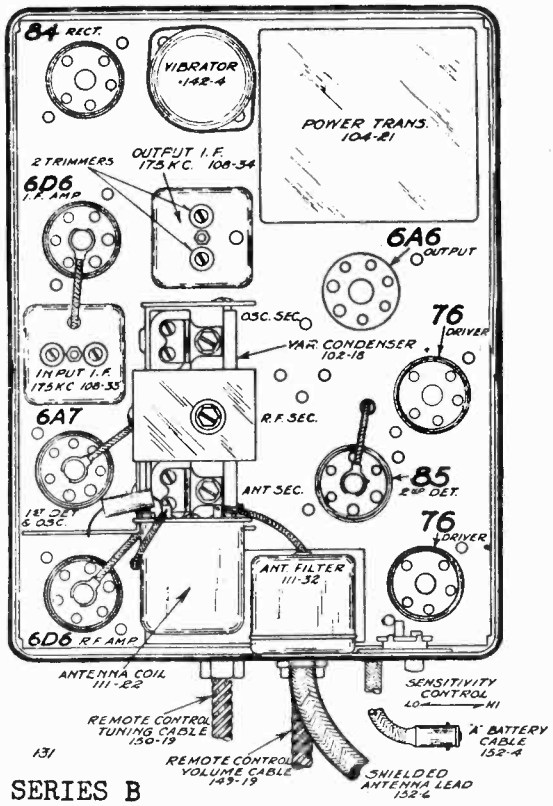
3. Shift test oscillator to 1400 K.C. and pick up signal by rotating condenser and adjust R.F. (center) and antenna (front) trimmers to resonance, see top view.
4. Re-set external oscillator to 600 K.C. and adjust series pad to resonance, rotate condenser and move dial pointer to 600 K.C. by gently rocking condenser to and fro. Pick up oscillator signal while adjusting series pad to resonance. This adjustment is accessible from the bottom of the chassis.
   (a) Check for sensitivity at 1000, 800 and 600 K.C. by setting test oscillator to these frequencies and picking up the signal by rotating variable condenser. Under no circumstances bend plates of oscillator section, bend R.F. and antenna plates only if absolutely necessary.

MODEL S-741
Series A, B, C

WESTERN AUTO SUPPLY CO.



SERIES A



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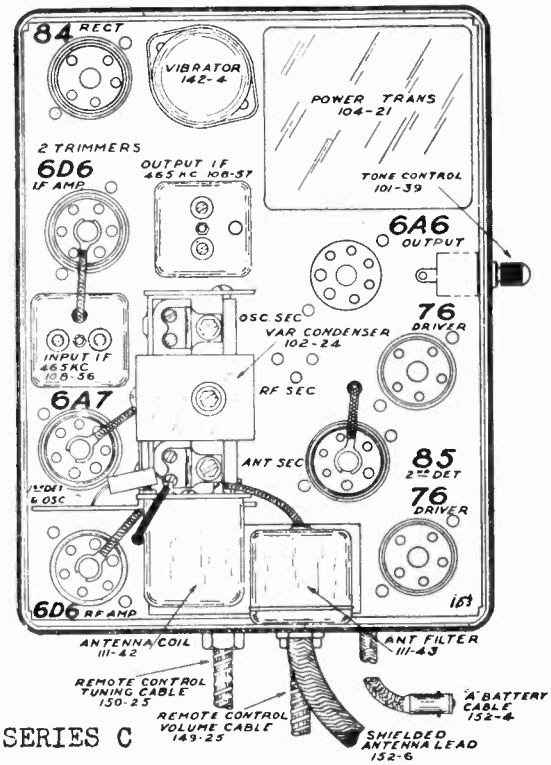
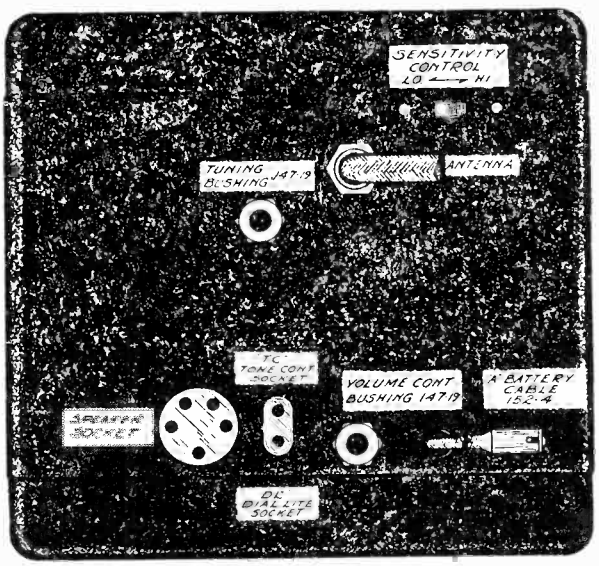
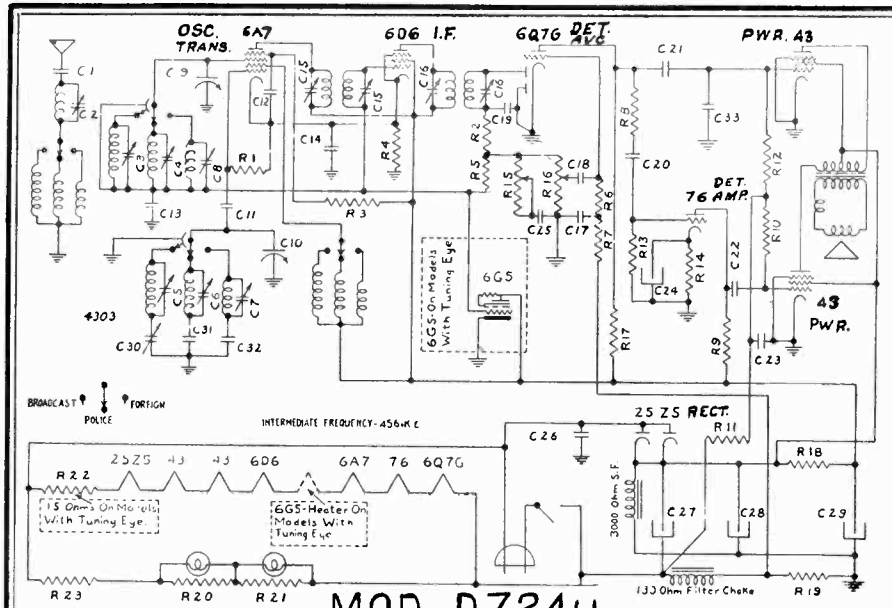


SERIES C

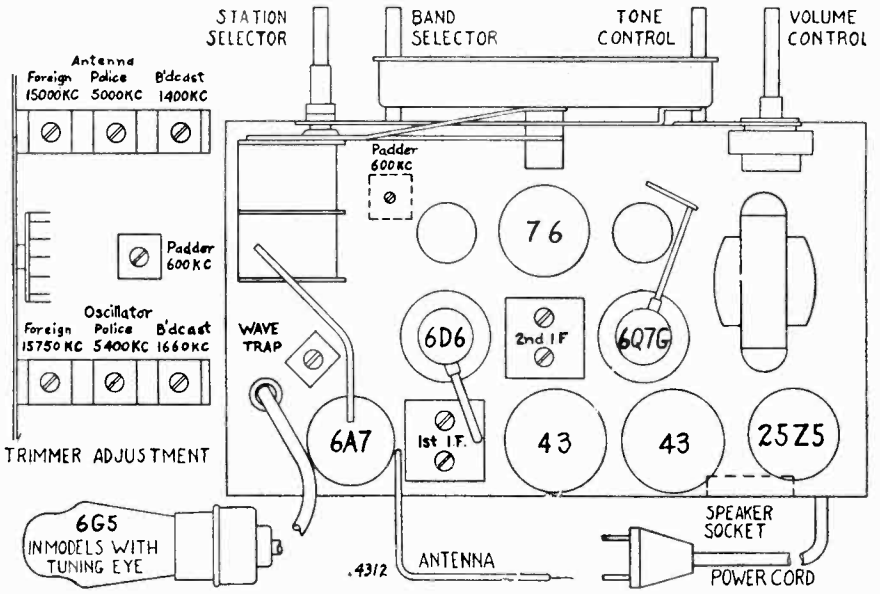


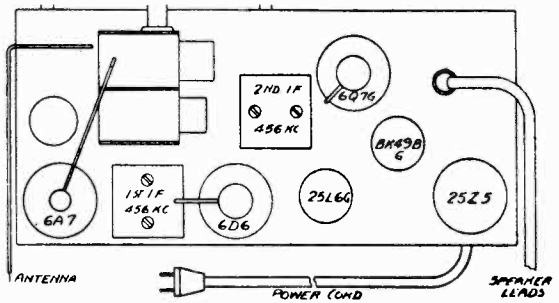
Arrangemnet of Series A & C is similar to Series B, except that Series A & C have no Sensitivity Control Switch



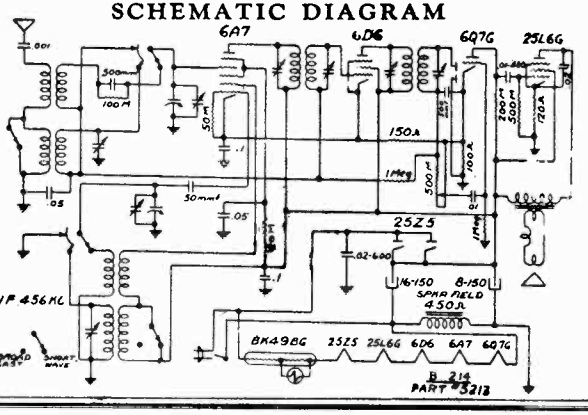
MOD. D724U

Symbol	Part No.	Description
C-1	3137	.001-400 V.
C-2	2559	180 MMF Trimmer
C-3, 4, 5, 6, 7	2597	1-10 MMF Trimmer
C-8	1611	3-35 MMF Trimmer
C-9, 10	2871	350 MMF Variable
C-11, 33	2780	50 MMF Mica
C-12, 13	580	.05-200 V.
C-14, 17	572	.1-200 V.
C-15, 16	2445	IF Trimmer
C-18, 20, 21, 22	576	.02-400 V.
C-19	1286	250 MMF Mica
C-23	566	.5-200 V.
C-25	581	.005-600 V.
C-26	2600	.02-600 V.
C-27	4297	20 MF-150 V.
C-24		4 MF-18 V.
C-28	4298	30 MF-150 V.
C-29		10 MF-150 V.
C-30	2560	220-550 MMF Padder
C-31	2741	1330 MMF 5%
C-32	2740	3850 MMF 5%
R-1, 2	631	50 M-⅓ W.
R-3, 14	4302	20 M-⅓ W. 10%
R-4	2689	100 OHM-⅓ W.
R-5, 6, 7	624	1 Meg.-⅓ W.
R-8	2599	1 Meg.-⅓ W.-10%
R-9	4300	250 M-⅓ W.-10%
R-10, 12	2731	500 M-⅓ W.-10%
R-11	2568	300 M-⅓ W.-10%
R-13	2880	100 M-⅓ W.-10%
R-15	2737	2 Meg. Tone Control
R-16	2726	500 M Volume Control
R-17	2730	200 M-⅓ W.-10%
R-18	2886	500 OHM-1 W.-10%
R-19	3580	100 OHM-.5 W.
R-20, 21	4296	32 OHM 3 W.
R-22	4304	15 OHM—On Eye Models
	4301	35 OHM—4W—Wire Wound
R-23	802	300 OHM Line Cord
	2755	Antenna Coil
	2724	Band Switch
	2857	Oscillator Coil
	2860	1st IF Transformer
	2859	2nd IF Transformer
	4295	Filter Choke
	1489	5 Prong Socket
	789	6 Prong Socket
	2165	7 Prong Socket
	2557	7 Prong Octal Socket
	530	Pilot Lamp
	2378	Pointer
	1408	Pointer Screw
	2981	Tuning Eye Cable
	4307	Speaker—10"
	4306	Speaker—8"





SCHEMATIC DIAGRAM



WESTERN AUTO SUPPLY CO.

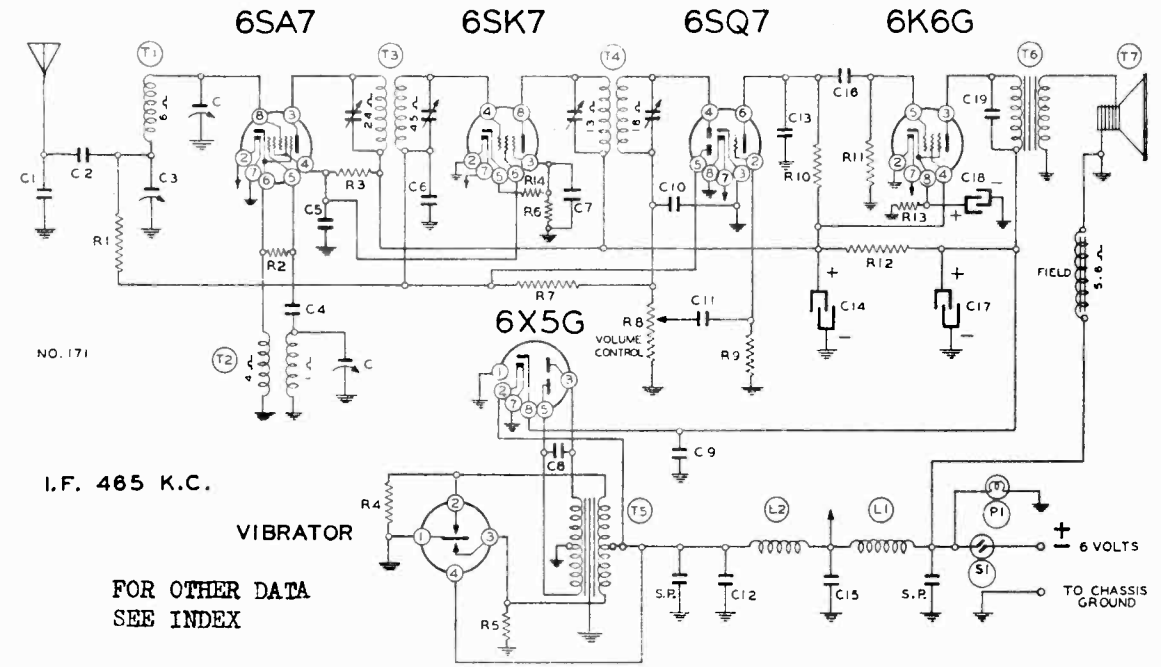
MODEL D-724U

MODEL D-905

6A7—Oscillator Translator
6D6—IF Amplifier
6Q7G—Detector-AVC-1st Audio

25L6G—Power Output
25Z5—Rectifier
BK49BG—Ballast

FOR CONVENTIONAL ALIGNMENT, SEE SPECIAL SECTION VOLUME VIII



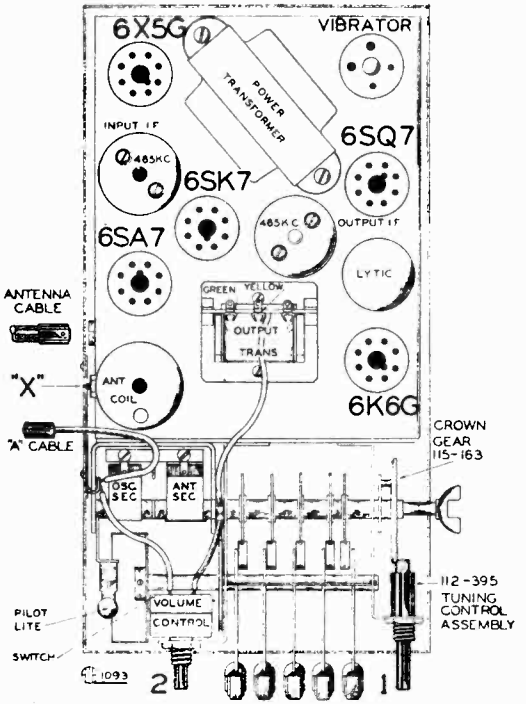


FIG. 3—TOP VIEW

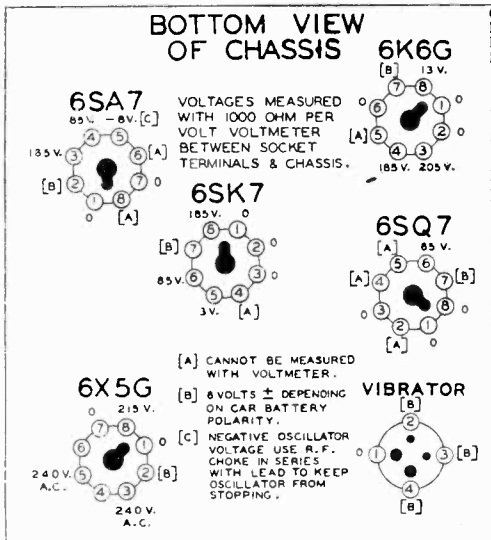


FIG. 4

Circuit Diagram Ref. No.	Part No.	Description
		RESISTORS
R1	13011	250M ohm—½ w.
R2	130236	30M ohm—½ w.
R3	130307	15M ohm—1 watt
R4	13060	100 ohm—½ w.
R5	13060	100 ohm—½ w.
R6	13070	500 ohm—½ w.
R7	1304	3 megohm—½ w.
R8	101110	1 megohm volume control
R9	130257	5 megohm—½ w.
R10	13011	250M ohm—½ w.
R11	1303	500M ohm—½ w.
R12	130199	1500 ohm—1 watt
R13	130308	750 ohm—1 watt
R14	130174	50 ohm—½ w.
		CONDENSERS
C	10269	2 gang variable condenser
C1	1293	.00002 mica
C2	10055	.01 x 400 volts
C3	12434	Adj. Antenna Trimmer
C4	12921	.0002 mica
C5	100115	.05 x 400 v.
C6	1009	.05 x 200 v.
C7	10020	.1 x 200 v.
C8	10034	.005 x 1200 v.
C9	12912	.00025 mica
C10	1295	.0001 mica
C11	10025	.002 x 600 v.
C12	10031	.5 x 120 v.
C13	1292	.0005 mica
C14	119105	15 ufd. lytic x 350 w. v.
C15	10031	.5 x 120 v.
C16	10078	.01 x 200 v.
C17	119105	15 ufd. lytic x 350 w. v.
C18	119105	20 ufd. lytic x 25 w. v.
C19	10087	.01 x 600 v.
		C14, C17 and C18 in same unit
		PARTS
T1	11195B	Antenna Coil
T2	110146	Oscillator Coil
T3	108139	Input I. F. Coil—465 kc.
T4	108121B	Output I. F. Coil—465 kc.
T5	104131	Power Transformer
T6	10567	Output Transformer
T7	114114-R	5" Dynamic Speaker (5.6 ohm field)
L1	10568	"A" Choke
L2	10566	"A" Choke
S1		Switch on volume control
P1	10797	Pilot light (T51) 6-8 volts
S.P.	11749	(2) Spark Plates

TUBE COMPLEMENT

The tube complement of this chassis consists of the following metal and octal base glass tubes which are interchangeable with metal tubes.

1—Type No. 6SA7—Mixer first detector and oscillator.

1—Type No. 6SK7—Remote Cut-off Pentode as an I.F. Amplifier.

1—Type No. 6SQ7—Duplex Diode Triode Second Detector, A.V.C. and First Audio.

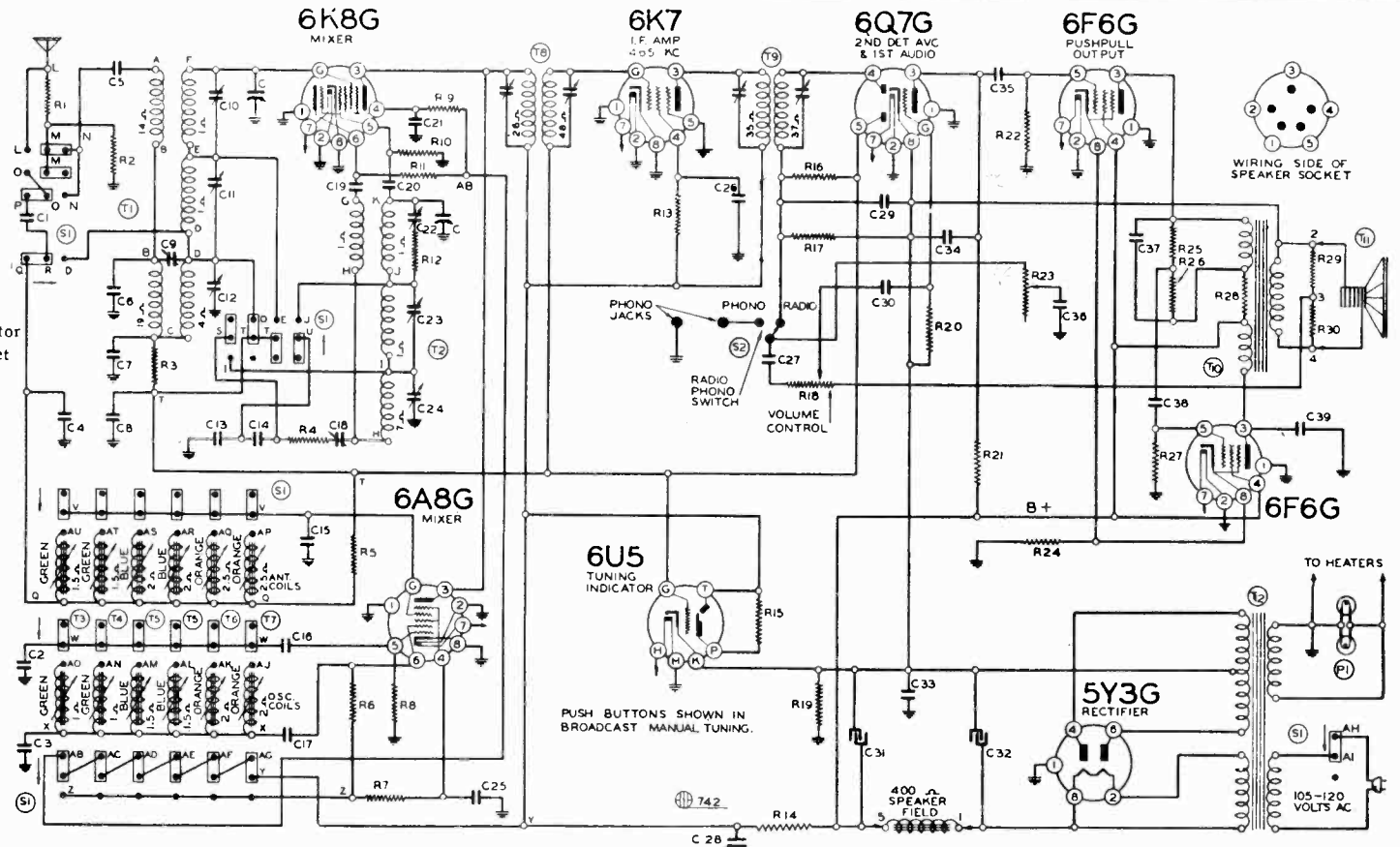
1—Type No. 6K6G—Pentode Output Amplifier.

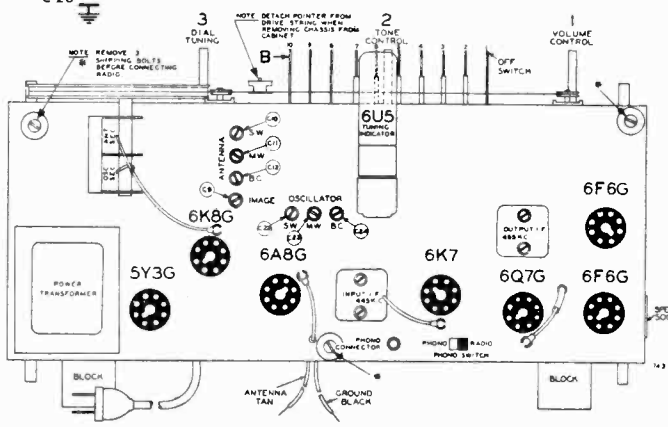
1—Type No. 6X5G—High Vacuum Rectifier.

JANUARY, 1940

Cir. Ref. No.	Part No.	Description
		RESISTORS
R1	13041	800 ohm—⅓ w.
R2	13017	10M ohm—⅓ w.
R3	130103	100M ohm—⅓ w.
R4	130231	75 ohm—⅓ w.
R5	1309	200M ohm—⅓ w.
R6	130149	15M ohm—⅓ w.
R7	13012	50M ohm—⅓ w.
R8	13012	50M ohm—⅓ w.
R9	13012	50M ohm—⅓ w.
R10	13012	50M ohm—⅓ w.
R11	13065	30M ohm—1 watt
R12	130174	50 ohm—⅓ w.
R13	130103	100M ohm—⅓ w.
R14	130260	3500 ohm—1 watt
R15	130110	1 megohm—in tuning indicator socket
R16	1304	3 megohm—⅓ w.
R17	1303	500M ohm—⅓ w.
R18	101133	1 megohm volume control
R19	130197	20 ohm—⅓ w.
R20	130225	15 megohm—⅓ w.
R21	1309	200M ohm—⅓ w.
R22	1303	500M ohm—⅓ w.
R23	101134	300M ohm tone control
R24	130261	220 ohm— 2 watt
R25	1303	500M ohm—⅓ w.
R26	130193	3000 ohm—⅓ w.
R27	1303	500M ohm—⅓ w.
R28	130262	450 ohm—1 watt
R29	130215	25 ohm—⅓ w.
R30	130168	100 ohm—⅓ w.
		CONDENSERS
C	10283	2 gang variable
C1	10025	.002 x 600 v.
C2	129119	.000329 mica (0-Temp Coeff
C3	129123	.0008 mica (0-Temp Coeff
C4	12971	.002 mica
C5	12987	.000105 mica
C6	129126	.00007 mica
C7	10077	.00304 x 600 v.
C8	10093	.05 x 200 v.
C9	12459	Image rejection trimmer
C10	12459	S. W. Antenna trimmer
C11	12459	M. W. Antenna trimmer
C12	12459	B. C. Antenna trimmer
C13	129125	.00422 compression type mica
C14	129124	.00125 compression type mica
C15	129111	.000484 mica (0-Temperature Coefficient)
C16	12912	.00025 mica
C17	10025	.002 x 600 v.
C18	12444	Series Pad
C19	10025	.002 x 600 v.
C20	12939	.00005 mica
C21	10094	.05 x 600 v.
C22	12458	S. W. Oscillator trimmer
C23	12458	M. W. Oscillator trimmer
C24	12458	B. C. Oscillator trimmer
C25	10094	.05 x 600 v.
C26	10094	.05 x 600 v.
C27	10026	.02 x 400 v.
C28	10045	.1 x 600 v.
C29	12921	.0002 mica
C30	10071	.004 x 600 v.
C31	10316	30 mfd. lytic—350 v.
C32	10317	30 mfd. lytic—450 v.
C33	10020	.1 x 200 v.
C34	1292	.0005 mica
C35	10097	.02 x 600 v.
C36	10012	.003 x 600 v.
C37	10012	.003 x 600 v.
C38	10097	.02 x 600 v.
C39	10012	.003 x 600 v.

1938, 1939





		PARTS
T1	111109	Antenna Coils
T2	11094	Oscillator Coil
T3	110100	High Frequency P. B. Coil
T4	110100B	High Frequency P. B. Coil
T5	110101	Medium Frequency P. B. Coil
T6	110102	Low Frequency P. B. Coil
T7	110102B	Low Frequency P. B. Coil
T8	108105K	Input I. F.—465 kc.
T9	108106K	Output I. F.—465 kc.
T10	10577	Output Transformer
T11	114144	10" Dynamic Speaker (600 ohm Field)
T12	104151	Power Transformer
S1	12565	Push Button Switch
S2	12561	Radio—Phono Switch
P1	10794	2—6-8 v. pilot lights

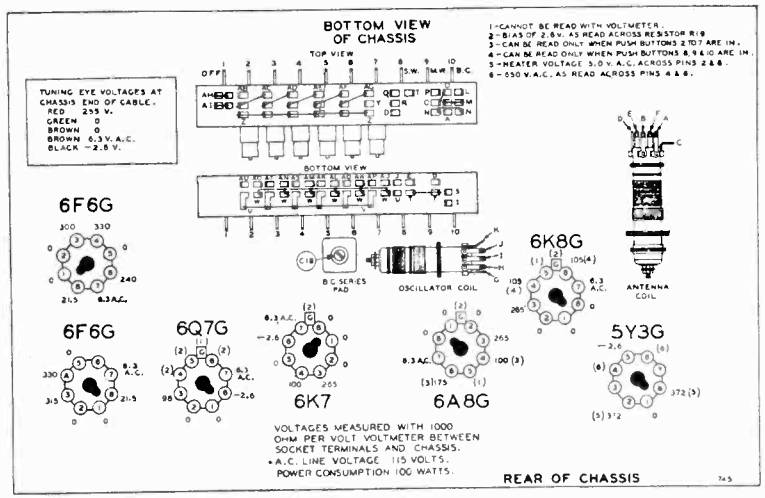
BAND	SIGNAL GENERATOR Frequency Setting	Dummy Antenna	Connection to Radio	Pushbutton Indicated Below Pushed "In"	Variable Condenser Setting	Trimmers Adjusted (in Order Shown)	Trimmer Function	Adjustment
I. F.	465 Kc.	.1 MFD.	Grid of 6K7 1.F Tube	Broadcast	Rotor full open (Plates out of mesh)	Two trimmers on top (See Fig. 1)	Output I. F.	Adjust to maximum output
	465 Kc.	.1 MFD.	Grid of 6K8G	Broadcast	Rotor full open (Plates out of mesh)	Two trimmers on top (See Fig. 1)	Input I. F.	Adjust to maximum output
SHORT WAVE BAND	17 Mc.	400 ohms	Antenna lead	Short Wave	Set dial at 17 MC	Trimmer (C22) (See Fig. 1)	Short wave oscillator	Adjust to maximum output
	17 Mc.	400 ohms	Antenna lead	Short Wave	Set dial at 17 MC	Trimmer (C10) (See Fig. 1)	Short wave antenna	Adjust to maximum output
MEDIUM WAVE BAND	5 Mc.	400 ohms	Antenna lead	Med. Wave	Set dial at 5 MC	Trimmer (C23) (See Fig. 1)	Medium wave oscillator	Adjust to maximum output
	5 Mc.	400 ohms	Antenna lead	Med. Wave	Dial set at 5 MC	Trimmer (C11) (See Fig. 1)	Medium wave antenna	Adjust to maximum output
BAND BROAD-CAST	1600 Kc.	200 mmf.	Antenna lead	Broadcast	Rotor full open (Plates out of mesh)	Trimmer (C24) (See Fig. 1)	Broadcast oscillator	Adjust to maximum output
	1400 Kc.	200 mmf.	Antenna lead	Broadcast	Set dial at 1400 Kc.	Trimmer (C12) (See Fig. 1)	Broadcast antenna	Adjust to maximum output
	600 Kc.	200 mmf.	Antenna lead	Broadcast	Set dial at 600 Kc.	Trimmer (C18) (See Fig. 4)	Broadcast oscillator series pad	Adjust to maximum rock dial. (See note "A")
IMAGE REJECTION ADJUST-MENTS	1930 Kc.	200 mmf.	Antenna lead	Broadcast	Pick up signal at 1000 Kc. on dial	Trimmer (C9) (See Fig. 1)	Image rejection	Adjust for minimum output (See note "B")

NOTE "A". Turn the dial back and forth slightly (rock) and adjust trimmer until the peak of greatest intensity is obtained.

NOTE "B". 1930 Kc. is the image frequency of 1000 Kc. Adjust Trimmer (C9) until a minimum output is obtained.

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

After each band is completed, repeat the procedure as a final check.

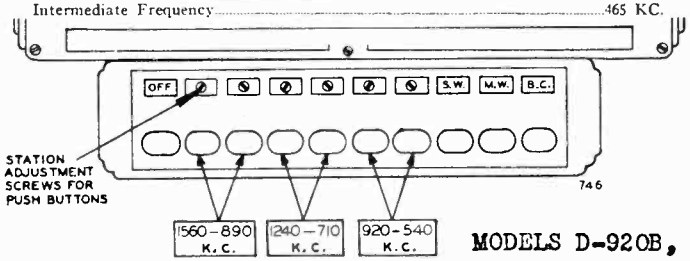


7 Tube Including Cathode-Ray Tuning Indicator

2-Band A. C. Superheterodyne Receiver

BAND	FREQUENCY RANGE
Broadcast	535 to 1600 Kc.
Medium Wave	1.58 to 5.5 MC.
Short Wave	5.0 to 18.3 MC.

Power Consumption.....130 Watts (At 115 volts 50-60 cycles)
Power Output.....8 Watts Undistorted. 12 Watts Maximum
Intermediate Frequency.....465 KC.



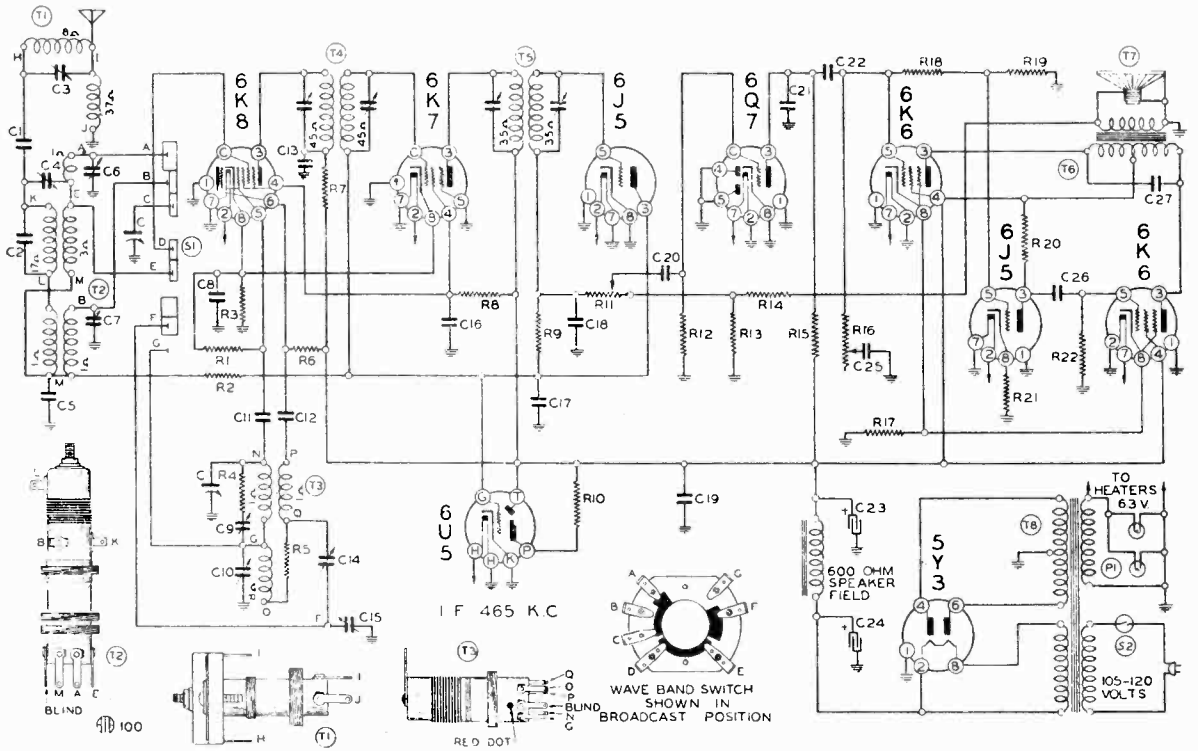
MODELS D-920B, D-921

FIG. 3—Showing Station Adjustment Screws.

PROCEDURE FOR SETTING THE AUTOMATIC STATION PUSHBUTTONS:

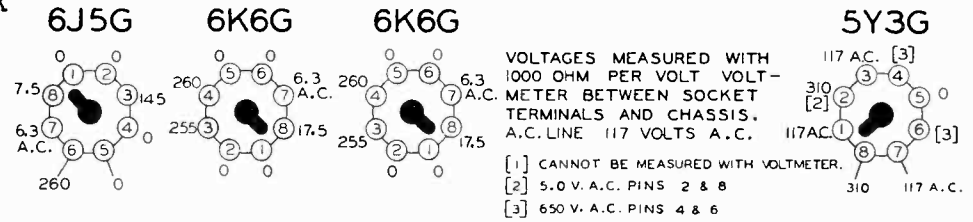
Only a single adjustment for each station is required in setting up your favorite stations for automatic pushbutton operation. These adjustments are located at the front of the chassis shown in Fig. 3 and are accessible through the station call letter tab holes. The only equipment needed is a small screw driver to make the adjustments.

After you have made up your list of stations, press button marked "Broadcast" and tune set manually until station selected having the highest frequency is tuned in and the program noted. Press button covering frequency range in which station is located (See Fig. 3). Adjust screw through station tab opening above button pressed until the same station is heard clearly and tuning indicator indicates that it is correctly tuned.



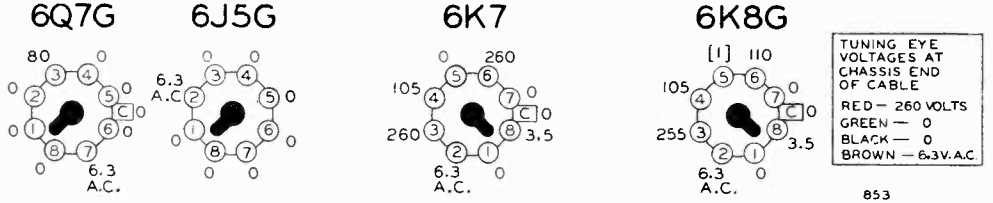
FOR TUNER SEE INDEX

BOTTOM VIEW OF CHASSIS I. F. FREQUENCY 465 KC.



VOLTAGES MEASURED WITH 1000 OHM PER VOLT VOLTMETER BETWEEN SOCKET TERMINALS AND CHASSIS. A.C. LINE 117 VOLTS A.C.

[1] CANNOT BE MEASURED WITH VOLTMETER.
[2] 5.0 V. A.C. PINS 2 & 8
[3] 650 V. A.C. PINS 4 & 6



TUNING EYE VOLTAGES AT CHASSIS END OF CABLE
RED — 260 VOLTS
GREEN — 0
BLACK — 0
BROWN — 6.3 V. A.C.

853

MARCH, 1939

REAR OF CHASSIS

ISSUE A
March 1939
Serial No. 9C628200 up

Circuit Diagram Ref. No.	Part No.	Description
		RESISTORS
R1	13094	50M ohm—½ w.
R2	13011	250M ohm—½ w.
R3	13097	200 ohm—½ w.
R4	130174	50 ohm—½ w.
R5	130174	50 ohm—½ w.
R6	130281	35M ohm—1 watt
R7	130192	2M ohm—½ w.
R8	130196	30M ohm—1 watt
R9	1304	3 megohm—½ w.
R10	130110	1 megohm—1/10 in tuning ind. socket
R11	101159	1 megohm volume control
R12	130225	15 megohm—½ w.
R13	130215	25 ohm—½ w.
R14	130168	100 ohm—½ w.
R15	1309	200M ohm—½ w.
R16	101165	1 megohm tone control
R17	130220	300 ohm—1 watt
R18	130163	400M ohm—½ w.
R19	130103	100M ohm—½ w.
R20	13094	50M ohm—½ w.
R21	130218	5M ohm—½ w.
R22	1303	500M ohm—½ w.
		CONDENSERS
C	102101	2 gang variable condenser
C1	10011	.01 x 400 v.
C2	129132	.000125 mica
C3	12467	Wave Trap Trimmer
C4	12482	Image Trimmer
C5	129131	.002775 mica
C6	12475	B.C. Antenna Trimmer
C7	12475	S.W. Ant. Trimmer
C8	100104	.5 x 100 v.
C9	12476	S.W. Osc. Trimmer
C10	12476	B.C. Osc. Trimmer
C11	12939	.00005 Mica
C12	10025	.002 x 600 v.
C13	10013	.05 x 400 v.
C14	12444	.000422 B. C. Series Pad
C15	129138	.0015 S. W. Series Pad. Comp. Type
C16	1001	.1 x 400 v.
C17	10020	.1 x 200 v.
C18	1295	.0001 mica
C19	1001	.1 x 400 v.
C20	10019	.006 x 600 v.
C21	1292	.0005 Mica
C22	10026	.02 x 400 v.
C23	11969	16 mfd. 350 w.v. lytic
C24	11973B	16 mfd. 400 w.v. lytic
C25	1009	.05 x 200 v.
C26	10076	.02 x 400 v.
C27	10012	.003 x 600 v.
		PARTS
T1	108144	Wave Trap
T2	111119	B.C. & S.W. Antenna Coils
T3	110111	B.C. & S.W. Osc. Coils
T4	108122C	Input I.F. Coil
T5	108106P	Output I.F. Coil
T6	10554C	Output Transformer
T7	114159	10" Dynamic Speaker
T8	104160	Power Transformer
S1	12572	Wave Band Switch
S2		Off-On Switch on Tone Control
P1	10794	2 - 6-8 v. Pilot lights

WESTERN AUTO SUPPLY CO.

MODEL D921

TRUETONE PAGE 12-9

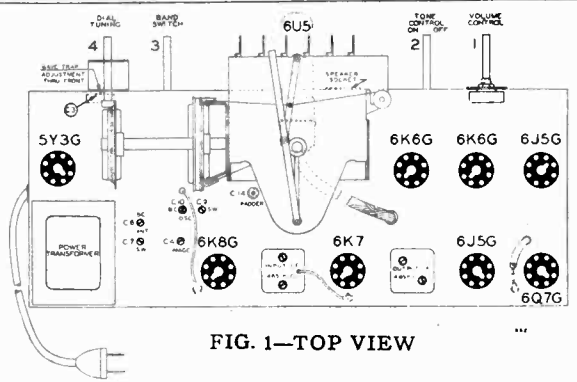


FIG. 1—TOP VIEW

TUBES:

The tube complement of this chassis consists of the following octal base glass and metal tubes:

The type and function of each tube is as follows:

1—Type 6K8G Converter (Oscillator and First Detector).
1—Type 6K7 Remote Cut-Off Pentode, I. F. Amplifier.
1—Type 6J5G Second Detector and A. V. C.
1—Type 6Q7G First Audio Amplifier.
1—Type 6J5G Phase Inverter
2—Type 6K6G Pentode Push-Pull Output Amplifiers.
1—Type 5Y3G High Vacuum Rectifier.
1—Type 6U5 Cathode-Ray Tuning Indicator.

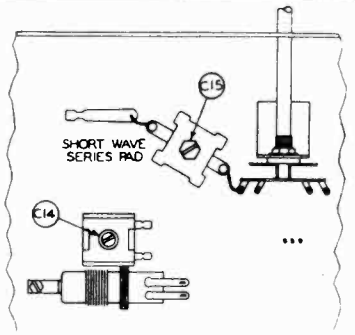


FIG. 4

ALIGNMENT PROCEDURE

- Volume control—Maximum all adjustments.
- Connect radio chassis to ground post of signal generator with a short heavy lead.
- Connect dummy antenna value in series with generator output lead.
- Connect output meter across primary of output transformer.
- 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., 200 mmf. and 400 ohms.

BAND	SIGNAL GENERATOR Frequency Setting	Dummy Antenna	Connection to Radio	Position of Band Switch	Variable Condenser Setting	Trimmers Adjusted (in Order Shown)	Trimmer Function	Adjustment
I. F.	465 Kc.	.1 MFD.	Grid of 6K7	Broadcast (Extreme left rotation)	Rotor full open (Plates out of mesh)	Two trimmers on top (See Fig. 1)	Output I. F.	Adjust to maximum output
	465 Kc.	.1 MFD.	Grid of 6K8G	Broadcast (Extreme left rotation)	Rotor full open (Plates out of mesh)	Two trimmers on top (See Fig. 1)	Input I. F.	Adjust to maximum output
BROAD-CAST BAND	1750 Kc.	200 mmf.	Antenna lead	Broadcast (Extreme left rotation)	Rotor full open (Plates out of mesh)	Trimmer (C10) (See Fig. 1)	Broadcast oscillator	Adjust to maximum output
	1500 Kc.	200 mmf.	Antenna lead	Broadcast (Extreme left rotation)	Set Dial at 1500 Kc.	Trimmer (C6) (See Fig. 1)	Broadcast antenna	Adjust to maximum output
	600 Kc.	200 mmf.	Antenna lead	Broadcast (Extreme left rotation)	Set Dial at 600 Kc.	Trimmer (C14) (See Fig. 1)	Broadcast oscillator series pad	Adjust to maximum rock dial. (See note "A")
	465 Kc.	200 mmf.	Antenna lead	Broadcast (Extreme left rotation)	Set Dial at 600 Kc.	Trimmer (C3) (See Fig. 1)	I. F. Wave Trap	Adjust for minimum output
IMAGE REJECTION ADJUST-MENTS	2430 Kc.	200 mmf.	Antenna lead	Broadcast (Extreme left rotation)	Pick up signal at 1500 Kc. on dial	Trimmer (C4) (See Fig. 1)	Image rejection	Adjust for minimum output (See note "B")
SHORT WAVE BAND	17 Mc.	400 ohms	Antenna lead	Short Wave (Extreme right rotation)	Set Dial at 17 MC.	Trimmer (C9) Top of Chassis (See Fig. 1)	Short Wave oscillator	Adjust to maximum output
	17 Mc.	400 ohms	Antenna lead	Short Wave (Extreme right rotation)	Dial Set at 17 MC.	Trimmer (C7) (See Fig. 1)	Short Wave antenna	Adjust to maximum output
	6 Mc.	400 ohms	Antenna lead	Short Wave (Extreme right rotation)	Set Dial at 6 MC.	Trimmer (C15) (See Fig. 4)	Short Wave oscillator series pad	Adjust to maximum rock dial. (See note "A")

NOTE "A." Turn the dial back and forth slightly (rock) and adjust trimmer until the peak of greatest intensity is obtained.

NOTE "B." 2430 Kc. is the image frequency of 1500 Kc. Adjust Trimmer (C4) until a minimum output is obtained.

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

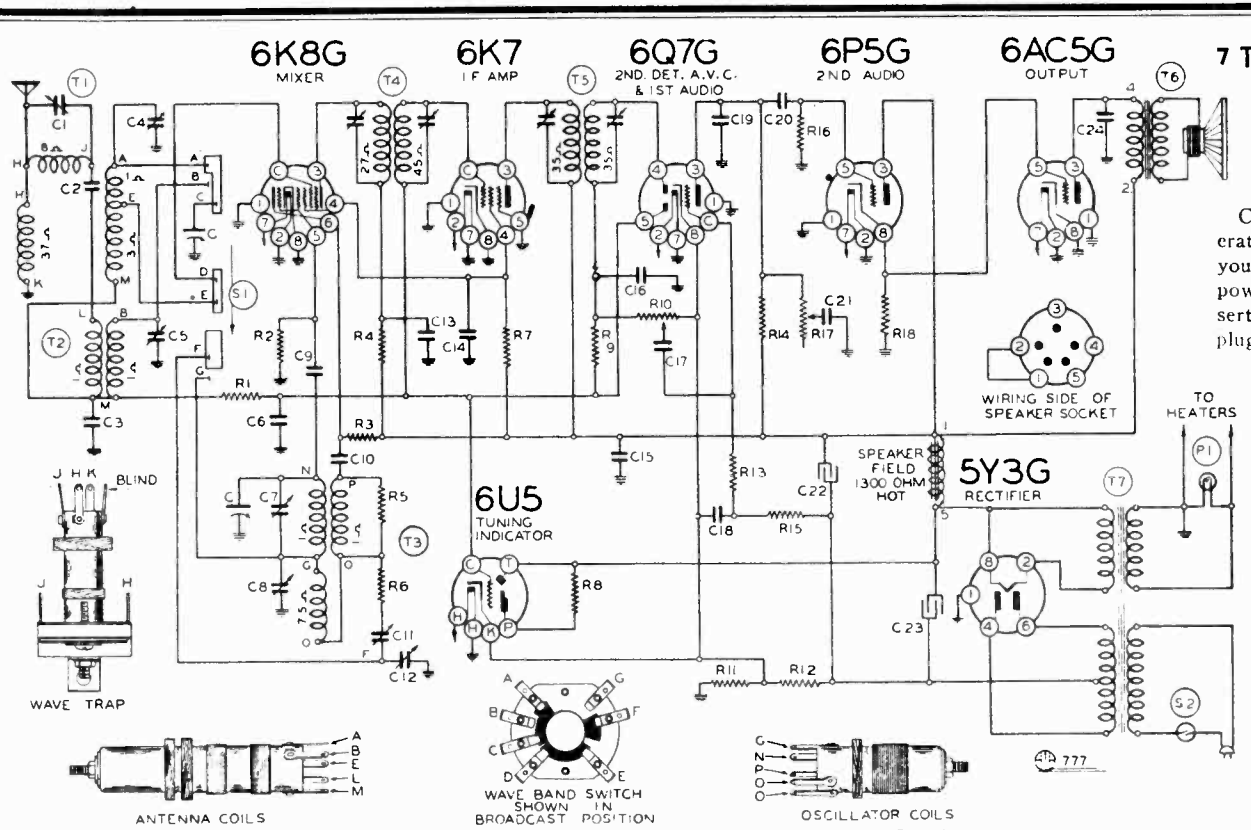
After each band is completed, repeat the procedure as a final check.

BAND SWITCH	BAND	FREQUENCY RANGE
Extreme right rotation	Short Wave	5.5 to 18.3 MC.
Extreme left rotation	Broadcast	540 to 1750 KC.

Power Consumption.....85 Watts (At 115 volts 50-60 cycles)
Power Output.....5 Watts Undistorted, 7 Watts Maximum
INTERMEDIATE FREQUENCY.....465 KC.

DIAL SCALE FREQUENCY RANGE

BAND		
Broadcast	Upper	540 to 1750 KC. (Kilocycles)
Short Wave	Lower	5.5 to 18.3 MC. (Megacycles)



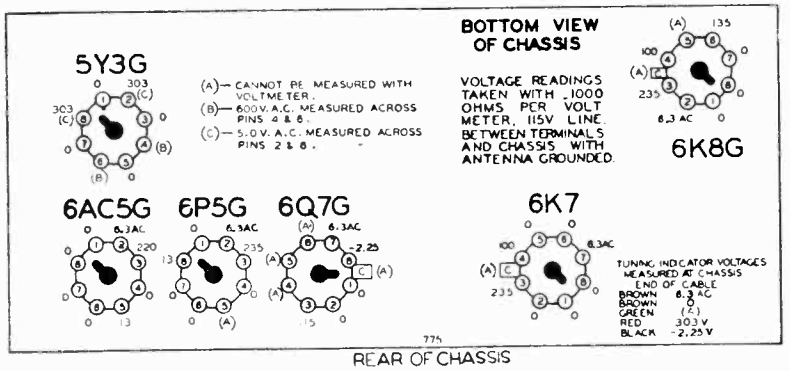


FIG. 3

1939

7 Tube Including Cathode-Ray Tuning Indicator

2-Band A. C. Superheterodyne Receiver

POWER SUPPLY:

Caution:—This radio, unless otherwise marked, must be operated from 105-115 volts, 50-60 cycle A. C. supply only. If you are in doubt as to the voltage and frequency rating of the power supply, consult your local power company before inserting plug. Do not insert plug unless all tubes and speaker plug are in their proper sockets.

TUBES:

The tube complement of this chassis consists of the following octal base glass and metal tubes:

The type and function of each tube is as follows:

1—Type 6K8G Triode Hexode, First Detector-oscillator.
1—Type 6K7 Remote Cut-Off Pentode, I. F. Amplifier (465 K. C.).
1—Type 6Q7G Duplex Diode Triode Second Detector, A. V. C. and First Audio.
1—Type 6P5G Driver Stage.
1—Type 6AC5G Positive Grid Triode Output Amplifier.
1—Type 5Y3G High Vacuum Rectifier.
1—Type 6U5 Cathode-Ray Tuning Eye.

I. F. FREQUENCY 465 KC.

Circuit Diagram Ref. No.	Part No.	Description
		RESISTORS
R1	13011	250M ohm—½ w.
R2	13012	50M ohm—½ w.
R3	1301	25M ohm—½ w.
R4	13023	2000 ohm—½ w.
R5	130235	1500 ohm—½ w.
R6	130240	30 ohm—½ w.
R7	13076	30M ohm—½ w.
R8	130110	1 megohm—in tuning indicator socket
R9	1304	3 megohm—½ w.
R10	101137	1 megohm volume control
R11	130203	40 ohm—½ w.
R12	130203	40 ohm—½ w.
R13	13019	1 megohm—½ w.
R14	1309	200M ohm—½ w.
R15	1303	500M ohm—½ w.
R16	13019	1 megohm—½ w.
R17	101157	250M ohm tone control
R18	1301	25M ohm—½ w.
		CONDENSERS
C	10285	2 gang variable condenser
C1	12451	Wave Trap adjustable trimmer
C2	10011	.01 x 400 v.
C3	129129	.0025 mica
C4	12473	B.C. Antenna Trimmer
C5	12473	S.W. Antenna Trimmer
C6	1009	.05 x 200 v.
C7	12472	S.W. Oscillator Trimmer
C8	12472	B.C. Oscillator Trimmer
C9	12939	.00005 mica
C10	10025	.002 x 600 v.
C11	12466	B. C. Oscillator Series Pad
C12	12466	S.W. Oscillator Series Pad
C13	10026	.02 x 400 v.
C14	1001	.1 x 400 v.
C15	10013	.05 x 400 v.
C16	1295	.0001 mica
C17	10019	.006 x 600 v.
C18	10020	.1 x 200 v.
C19	1292	.0005 mica
C20	10011	.01 x 400 v.
C21	10019	.006 x 600 v.
C22	11980	12 mfd. lytic—450 w. v.
C23	11980	12 mfd. lytic—450 w. v.
C24	10019	.006 x 600 v.
		PARTS
T1	108124	Wave Trap
T2	111115	Antenna Coils
T3	110104	Oscillator Coils
T4	108122	Input I. F.—465 kc.
T5	108106J	Output I. F.—465 kc.
T6	114148	10 in. Dynamic Speaker (Field Resis. 1300 ohms)
T7	104139B	Power Transformer
S1	12569	Wave Band Switch
S2		Off-on switch on tone control
P1	10794	6-8 v. pilot light

ALIGNMENT PROCEDURE

- Volume control—Maximum all adjustments.
- Connect radio chassis to ground post of signal generator with a short heavy lead.
- Connect dummy antenna value in series with generator output lead.
- Connect output meter across primary of output transformer.
- 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 200 mmf. and 400 ohms.

BAND	SIGNAL GENERATOR Frequency Setting	Dummy Antenna	Connection to Radio	Position of Band Switch	Variable Condenser Setting	Trimmers Adjusted (in Order Shown)	Trimmer Function	Adjustment
I. F.	465 Kc.	.1 MFD.	Grid of 6K7	Broadcast (Extreme left rotation)	Rotor full open (Plates out of mesh)	Two trimmers on top (See Fig. 1)	Output I. F.	Adjust to maximum output
	465 Kc.	.1 MFD.	Grid of 6K8	Broadcast (Extreme left rotation)	Rotor full open (Plates out of mesh)	Two trimmers on top (See Fig. 1)	Input I. F.	Adjust to maximum output
SHORT WAVE BAND	17 Mc.	400 ohms	Antenna lead	Short Wave (Extreme right rotation)	Set dial at 17 MC.	Trimmer (C7) Top of Chassis (See Fig. 1)	Short Wave oscillator	Adjust to maximum output
	17 Mc.	400 ohms	Antenna lead	Short Wave (Extreme right rotation)	Dial Set at 17 MC.	Trimmer (C5) (See Fig. 1)	Short Wave antenna	Adjust to maximum output
	6 Mc.	400 ohms	Antenna lead	Short Wave (Extreme right rotation)	Set dial at 6 MC.	Trimmer (C12) (See Fig. 1)	Short Wave oscillator series pad	Adjust to maximum rock dial. (See note "A")
BROAD-CAST BAND	1735 Kc.	200 mmf.	Antenna lead	Broadcast (Extreme left rotation)	Rotor full open (Plates out of mesh)	Trimmer (C8) (See Fig. 1)	Broadcast oscillator	Adjust to maximum output
	1400 Kc.	200 mmf.	Antenna lead	Broadcast (Extreme left rotation)	Set dial at 1400 Kc.	Trimmer (C4) (See Fig. 1)	Broadcast antenna	Adjust to maximum output
	600 Kc.	200 mmf.	Antenna lead	Broadcast (Extreme left rotation)	Set dial at 600 Kc.	Trimmer (C11) (See Fig. 1)	Broadcast oscillator series pad	Adjust to maximum rock dial. (See note "A")
	465 Kc.	200 mmf.	Antenna lead	Broadcast (Extreme left rotation)	Set dial at 600 Kc.	Trimmer (C1) (See Fig. 1)	I. F. Wave Trap	Adjust for **minimum** output

NOTE "A" Turn the dial back and forth slightly (rock) and adjust trimmer until the peak of greatest intensity is obtained.

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

After each range is completed, repeat the procedure as a final check.

BAND SWITCH	BAND	FREQUENCY RANGE
Extreme right rotation	Short Wave	5.6 to 18.3 MC.
Extreme left rotation	Broadcast	540 to 1735 KC.

Power Consumption.....70 Watts (At 115 volts 50-60 cycles)

Power Output.....3 Watts Undistorted, 5 Watts Maximum

INTERMEDIATE FREQUENCY.....**465 KC.**

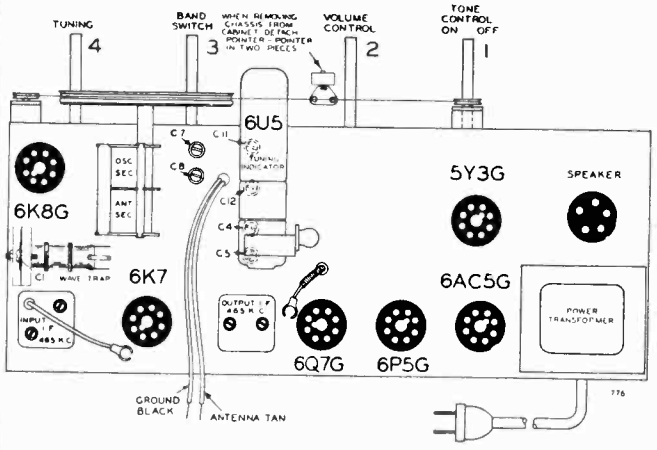


FIG. 1—TOP VIEW

SERVICE NOTES:

Voltages taken from different points of circuit to chassis are measured with volume control full on, all tubes in their sockets and speaker connected, with a volt meter having a resistance of 1000 ohms per volt.

All voltages as indicated on the voltage chart are measured with 115 volts on the primary of the power transformer.

Resistances of coil windings are indicated in ohms on the schematic circuit diagram.

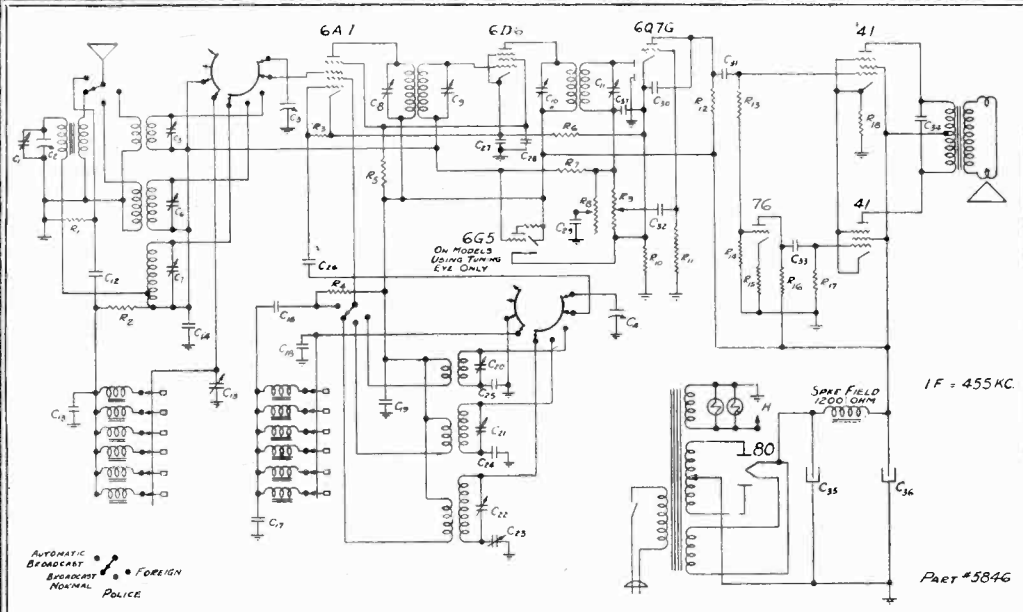
To check for open by-pass condensers, shunt each condenser with another condenser of the same capacity and voltage rating, which is known to be good, until the defective unit is located.

Excessive hum, stuttering, low volume and a reduction in all D. C. voltages is usually caused by a shorted electrolytic condenser; open by-pass condensers frequently cause oscillation and distorted tone.

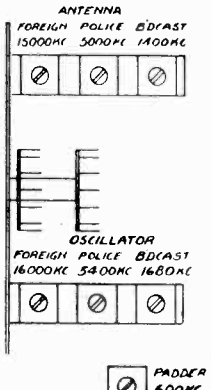
BAND	FREQUENCY RANGE
Broadcast	540 to 1735 KC. (Kilocycles)
Short Wave	5.6 to 18.3 MC. (Megacycles)

Receivers of this model which are to be used on voltages or frequencies other than 105-115 volts, 50-60 cycles are so marked. The power consumption of this receiver is 70 watts.

NOTE:—On the back of the string dial drum a calibrated scale is provided for aligning this chassis to the frequencies listed in the alignment procedure. Attach a pointer so that it will indicate proper dial setting in respect to the position of the variable condenser.



SETTING UP THE PUSH BUTTON STATION SELECTOR

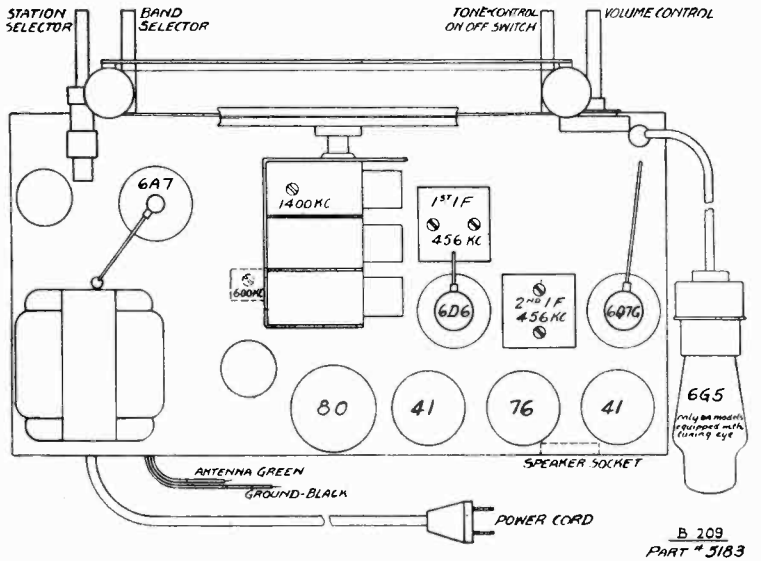


Call station nearest 1600 KC end of dial the No. 1 station and number five other stations consecutively as they are tuned in on the dial, tuning from left to right. Set band selector at "B", or second position from left, and tune in station No. 1. Observe program. Turn band selector knob to extreme left position. Push No. 1 button in as far as it will go. Insert screwdriver thru opening directly above No. 1 button and turn screwdriver until same station is heard. If station is not heard reverse direction of rotation.

Symbol	Part No.	Description
C1		Trimmer on variable
C2, 3, 4	5092	3-gang 362 mmfd. variable
C5, 20, 22	1611	3-35 mmfd. trimmer
C6, 7, 21	2597	1-10 mmfd. trimmer
C8, 9, 10, 11		I.F. Trimmers
C12, 30, 37	4810	.0005 400 V.
C13	5193	.002 Special 5%
C14, 28	572	.1 200 V.
C15	3272	30-140 mmf. trimmer
C16, 31, 33	576	.02 400 V.
C17, 18		370 mmf. Special 3%
C19	563	.05 400 V.
C23	2560	350 mmfd. Var. Padder
C24	2741	1330 mmfd. Padder
C25	2793	.006 600 V.
C26	2780	50 mmfd. Mica
C27	2792	.2 200 V.
C29	2695	.003 600 V.
C32	568	.01 400 V.
C34	824	.002 600 V.
C35	3285	16 mfd. 350 W.V. Elect.
C36	5101	16 mfd. 225 W.V. Reg. Elect.
R1	617	20M 1/3 W.
R2, 7, 11	624	1 Meg. 1/3 W.
R3, 16	631	50M 1/3 W.
R4	4529	10M 1/3 W.
R5	636	40M 1/3 W.
R6	2605	200 ohms 1/3 W.
R8	5099	2 meg. tone control
R9	5100	500M Volume Control
R10	2689	100 ohm 1/3 W.
	2647	50 ohm 1/3 W. on models using tuning eye
R12	2730	200M 1/3 W.
R13	2881	400M 1/3 W. 10%
R14	2880	100M 1/3 W. 10%
R15	2883	5M 1/3 W. 10%
R17	2731	500M 1/3 W.
R18	5184	310 ohm 5% Flexohm
	5091	Power Transformer
	3463-5	1st I.F. Transformer
	3463-6	2nd I.F. Transformer
	5096	Oscillator Coils
	5095	Antenna Coils
	2845	B.C. Antenna Coil
	2163	Drive Cable
	5185	Speaker 8"
	5832	Push Button Tuning Assembly Complete. (Replacement of individual component parts not recommended.)
	5810	Glass Indicator

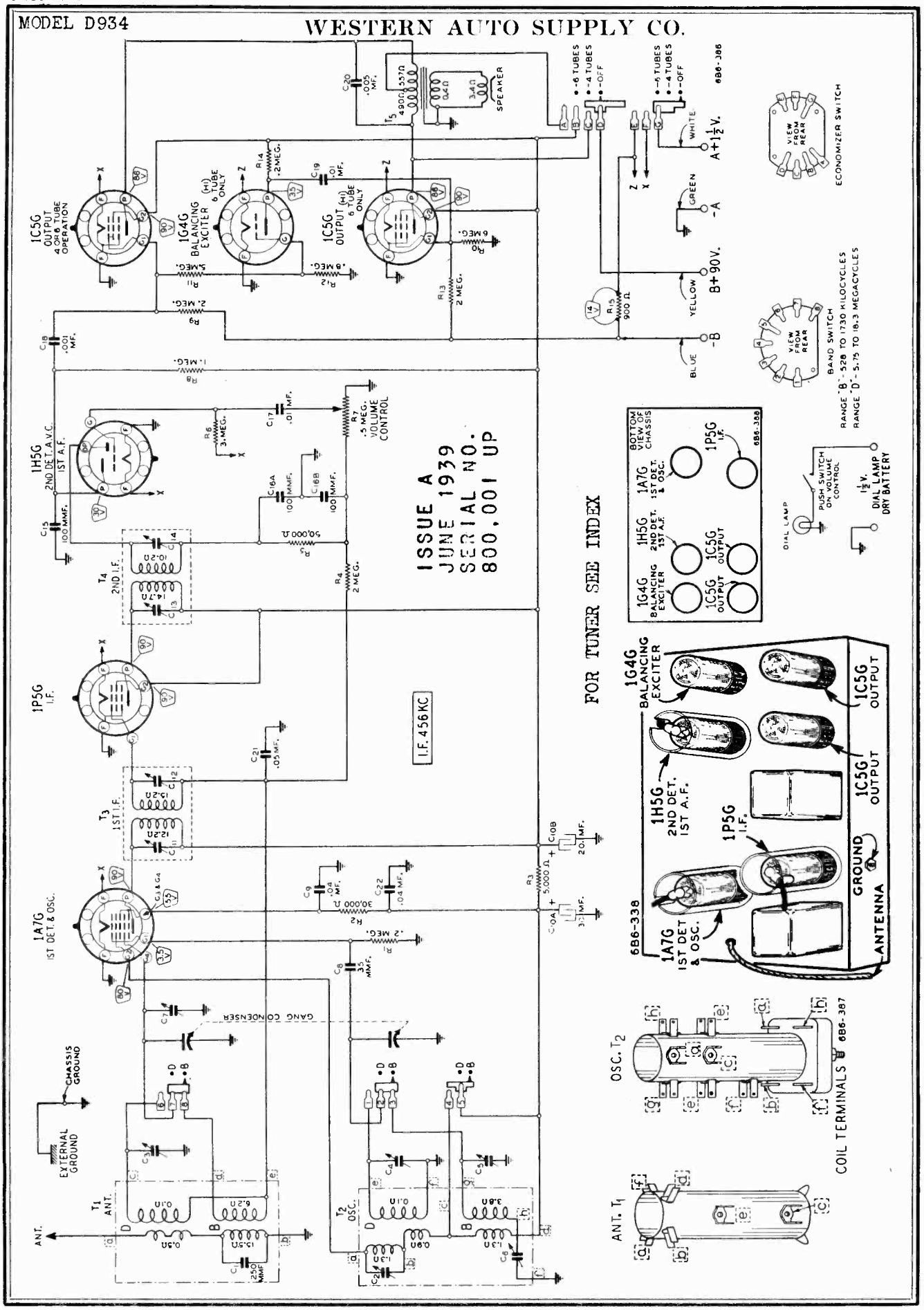
1—76 Driver—Phase Inverter
2—41 Power Output
1—80 Rectifier
1—6G5 Cathode Ray Tuning Tube (on models equipped with "eye" tuning indicator)

Tubes required are:
1—6A7 Oscillator-translator
1—6D6 Intermediate Frequency Amplifier
1—6Q7G Detector AVC—First Audio Amplifier



MODEL D934

WESTERN AUTO SUPPLY CO.



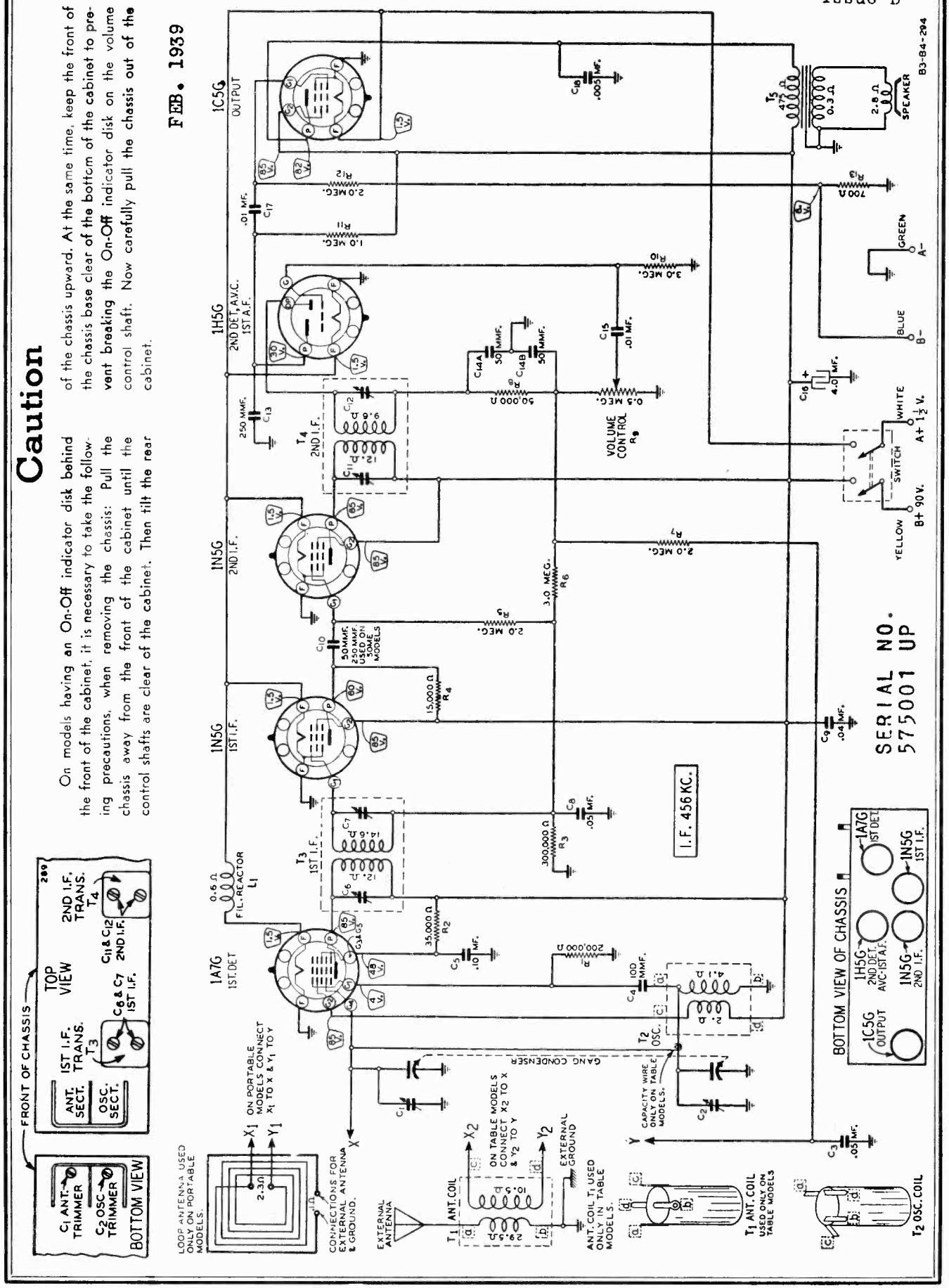
WESTERN AUTO SUPPLY CO.

MODEL D937
Issue B

FEB. 1939

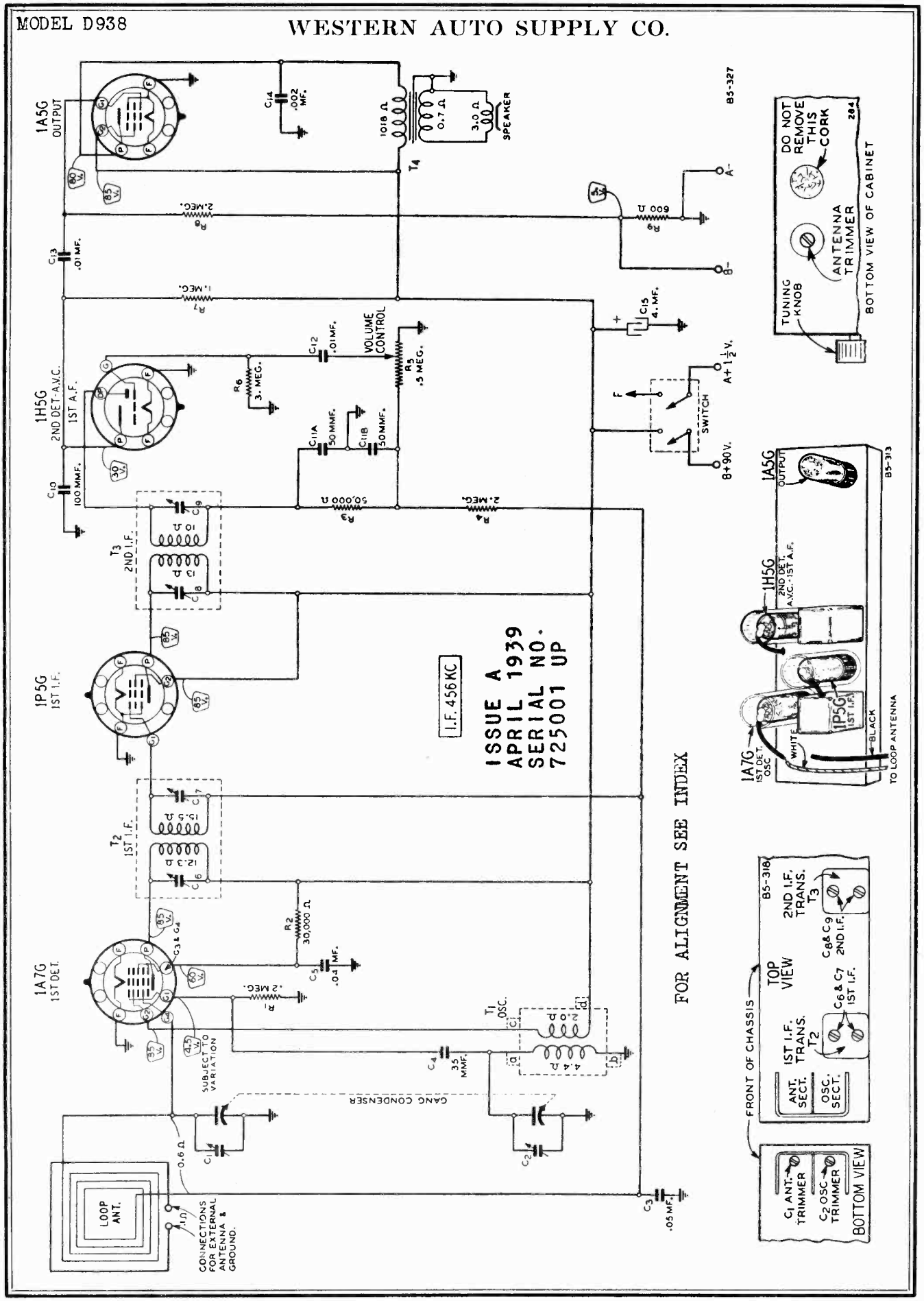
Caution

On models having an On-Off indicator disk behind the front of the cabinet, it is necessary to take the following precautions, when removing the chassis: Pull the chassis away from the front of the cabinet until the control shafts are clear of the cabinet. Then tilt the rear of the chassis upward. At the same time, keep the front of the chassis base clear of the bottom of the cabinet to prevent breaking the On-Off indicator disk on the volume control shaft. Now carefully pull the chassis out of the cabinet.



MODEL D938

WESTERN AUTO SUPPLY CO.



WESTERN AUTO SUPPLY CO.

MODEL D1042
Early and Issue A

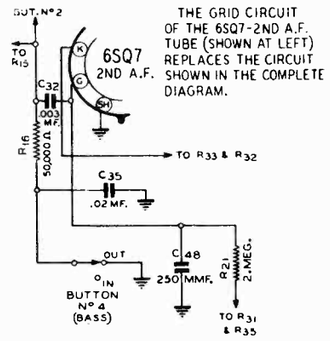
ISSUE A
MARCH 1940
SERIAL NO
575,001 UP

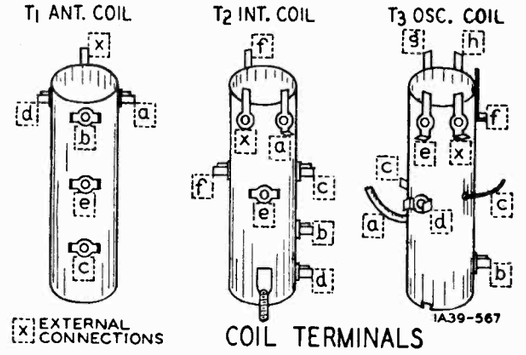
Antenna and Ground

Two built-in antennas are incorporated in the speaker compartment.

One of these, the Truetone Stratoscope loop antenna may be used for broadcast band reception. For the reception of local or nearby stations, an outside antenna and ground are usually not required. The use of the Stratoscope antenna may, in some locations, provide best broadcast band operation.

The other, a counterpoise foil antenna, is used for reception on the short wave bands.





WESTERN AUTO SUPPLY CO.

MODEL D1042
Early and Issue A

SPECIFICATIONS

Power Consumption - 103 Watts (At 117 volts 60 cycles)

Power Output - - - - - - - 8 Watts Undistorted
9 Watts Maximum

Selectivity - 29.5 KC Broad at 1000 times Signal (Sharp)

Intermediate Frequency - - - - - - - 456 KC

Speaker - - - - - - - - 12" Electro-Dynamic

Tuning Frequency Range

B Range ..... 528 to 1730 KC
C Range .....2200 to 7000 KC
D Range .....7000 to 22000 KC

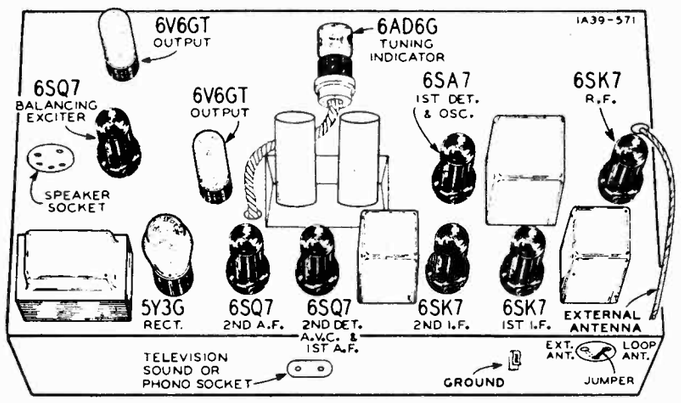
Sensitivity —External Antenna—(For 0.5 Watt output)

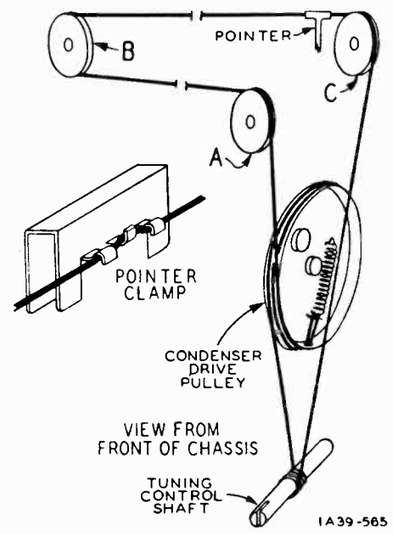
B Range ..... 1.0 Microvolt Average
C Range ..... 1.0 Microvolt Average
D Range ..... 3.0 Microvolts Average

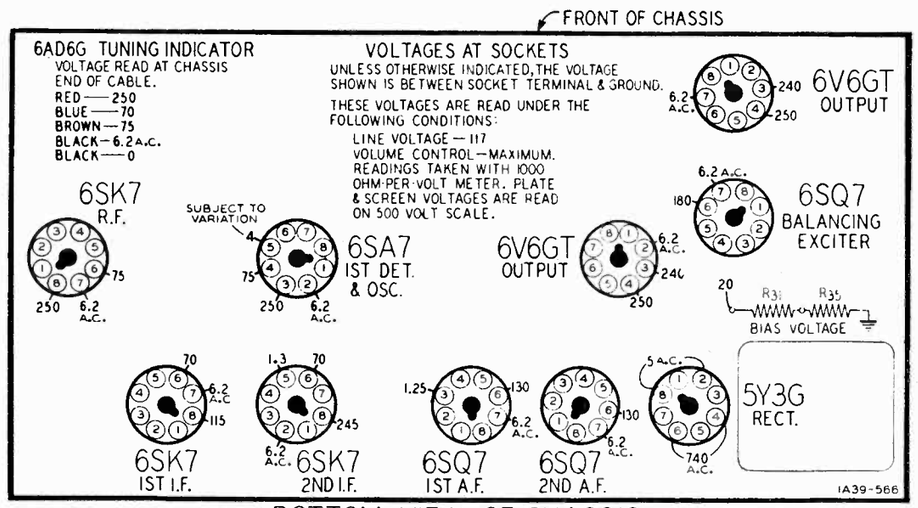
ISSUE A
MARCH 1940
SERIAL NO
575,001 UP

6 STATION BUTTONS
11 TUBES
3 BANDS

TRUETONE
CHROMATIC
CONTROL







BOTTOM VIEW OF CHASSIS

MODEL D1042
Early and Issue A

WESTERN AUTO SUPPLY CO.

Procedure for Setting the Station Buttons

Selecting the Stations to be Set

There are 6 buttons on the automatic tuning dial by means of which 6 stations may be set for quick tuning.

Make a list of your favorite stations, those which you tune in regularly. There may be any number up to and including 6 in this list.

It is better to list the station with the highest kilocycle number first, the station with the next lower kilocycle number next, and so on.

Any button may be used for any station you can receive, although it will be more convenient to set the stations in the buttons whose numbers decrease from left to right.

Setting a Station Button

Pull the chromatic control button No. 2 out to the sharp tuning position—

Now unlock the push button tuning mechanism from the back of the radio. On the drive pulley shaft and at the left side (from back of radio) of the push button tuning assembly is a locking screw—See illustration.

Turn the manual tuning knob until the locking screw can be easily reached with a screwdriver.

Using a small handled screwdriver, unlock the mechanism by turning this screw several turns in a counter-clockwise direction.

TO SET STATIONS ACCURATELY, DO NOT JAR THE RADIO OR BUTTONS WHILE THE MECHANISM IS UNLOCKED.

Select the first station from the list you have prepared, and carefully tune in this station by means of the manual tuning knob, using the tuning eye as a guide.

With the other hand, see whether or not this station is still accurately tuned in by moving the tuning knob a slight amount back and forth while observing the tuning eye. *Be sure to hold the button all the way in.*

Slowly release the button after the station is tuned in.

CAUTION—Do not touch this button again while the mechanism is unlocked as the setting may be altered.

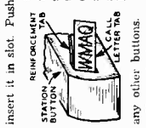
Carefully tune in the second station on your list. Then hold the tuning knob and push the second button slowly and firmly all the way in. Check for accurate tuning.

Proceed in the same manner to set any additional stations on your list on the remaining station buttons.

After all the stations are set, it will be necessary to lock the mechanism so that it cannot be easily changed. Turn the manual tuning knob until the locking screw can be easily reached with a screwdriver. Then with the SMALL HANDLED screwdriver, turn the locking screw in a clockwise direction until it is tight. Tighten the locking screw firmly but not excessively to avoid stripping the threads.

Insert a celluloid reinforcement tab half way in the slot at the front of the first station button.

Remove the correct station call letter tab for this button from the sheet supplied by bending the sheet back and forth at the score marks. Place the call letter tab in front of the celluloid reinforcement tab and insert it in slot. Push both tabs all the way in the button slot. Follow the same procedure for inserting the station call letter tabs in any other buttons.



If, at any time you wish to change the setting of a button from one station to another, repeat the above procedure. Changing the setting of one button will not affect the setting of any of the other buttons.

Removing Button Escutcheon and Lower Row of Buttons

Pull off volume control knob. Take out the 5 screws on the push button escutcheon and raise this escutcheon as far as possible.

Each button of the lower row of buttons is held on its plunger shaft with a spring which fits into a slot on the shaft.

Insert a screwdriver under the bottom of the escutcheon and push the spring off the bottom of the button. Then slip the screwdriver between the spring and the button and slide the spring until it slips over the side of the button. Then lift the button off. After the 5 buttons of the lower row are removed, the escutcheon plate may be taken off the cabinet.

To replace the lower row of push buttons on the plunger shafts, first put the push button escutcheon back in place. Then replace the spring in the slot on each button and push each button back on the shaft (with the flat portion of the spring at the top of the plunger) until the spring drops in the slot on the shaft.

Drive Cord Replacement

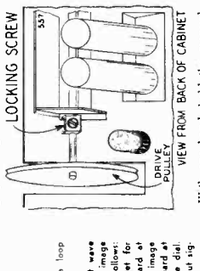
Use a drive cord approximately 74 inches in length. Tie a large knot with a small loop at one end of the new drive cord. Thread other end of cord up through hole in rim of condenser drive pulley. Pull cord through hole until large knot is flush against pulley rim.

Turn gang condenser to completely closed position.

Wind ¼ turn in a clockwise direction (from right side of chassis) around condenser drive pulley. Wind cord over pulleys A, B, and C as shown in illustration. Wind 4½ turns in a clockwise direction (from front of chassis) around tuning control shaft. Turns should progress toward the chassis.

Turn gang condenser to full open position. Wind 1½ turns in a clockwise direction (from right side of chassis) around condenser drive pulley. This turn should be at left side (from front of chassis) of pulley groove. Pass cord through hole in pulley from left to right. Tie cord to cord loop. Knot other end of cord to spring. Stretch spring and secure free end to hook on drive pulley.

Dial Pointer Attachment—Turn in a signal at a low frequency. Set the pointer at this frequency on the dial scale. Secure pointer to cord—See illustration.



With one hand, hold the manual tuning knob to prevent it from turning and with the other hand, push one of the station buttons shown in the illustration *all the way in*. It is better to start with the left hand button.

Hold this button all the way in.

ALIGNMENT PROCEDURE

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. and 400 ohms.

Volume Control—Maximum All Adjustments.

Button No. 2 (Voice)—pulled out all adjustments.

Connect Radio Chassis to Ground Post of Signal Generator with a Short Heavy Lead.

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

SIGNAL GENERATOR FREQUENCY SETTING	CONNECTION AT RADIO	DUMMY ANTENNA	BAND SWITCH SETTING	CONDENSER SETTING	ADJUST TRIMMERS TO MAXIMUM
All adjustments with the exception of the Loop Range B adjustment are made with the loop disconnected and the chassis out of the cabinet.				Wire jumper in Antenna Selector Socket on BACK of chassis may be in either position for all adjustments with the exception of the Loop Range B adjustment—See Note D.	
I. F.					
456 KC	Grid of 1st Det.	.1 mf.	B Range	Turn Rotor to Full Open	1st I.F. (C21) & (C22) 3rd I.F. (C26) & (C27)
RANGE B					
1730 KC	R. F. Grid	.1 mf.	B Range	Turn Rotor to Full Open	Oscillator Range B (C12)
1500 KC	R. F. Grid	.1 mf.	B Range	Turn Rotor to Max. Output Set Indicator to 1500 KC—See Note A	Int. Range B (C9)
600 KC	R. F. Grid	.1 mf.	B Range	Turn Rotor to Max. Output	600 KC (C13) Rock Rotor—See Note B
RANGE C—See Note C					
7000 KC	Antenna Lead	400 Ohm	C Range	Turn Rotor to Full Open	Oscillator Range C (C11)
6000 KC	Antenna Lead	400 Ohm	C Range	Turn Rotor to Max. Output	Antenna Range C (C5) Int. Range C (C8)
RANGE D—See Note C					
22,000 KC	Antenna Lead	400 Ohm	D Range	Turn Rotor to Full Open	Oscillator Range D (C10)
21,000 KC	Antenna Lead	400 Ohm	D Range	Turn Rotor to Max. Output	Antenna Range D (C4) Int. Range D (C7) Rock Rotor—See Note B
LOOP RANGE B					
1500 KC See Note D	None—See Note D		B Range	Turn Rotor to Max. Output	See Note E Loop Trimmer (C6)

Attenuate the signal from the signal generator to prevent the leveling-off action of the A.V.C.

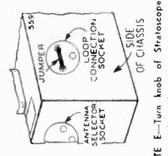
After each range is completed, repeat the procedure as a final check.

NOTE A—If the pointer is not at 1500 KC on the dial, remove pointer from drive cord. Turn gang condenser to completely mesh and set pointer to 1500 KC mark on the dial scale. Attach pointer to drive cord.

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

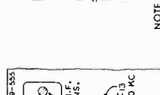
NOTE C—Insert a wire jumper as shown in illustration on this page in Loop Connection Socket located on SIDE of chassis.

NOTE D—Remove wire jumper from Loop Connection Socket and place in Antenna Selector Socket on BACK of chassis should be inserted in LOOP position—see illustration on page 1. Re-install the chassis in the cabinet. Connect one end of a loop approximately one foot in diameter across the antenna and ground posts of the signal generator. Place signal generator so that this loop is parallel and 10 feet from Stratoscope loop in cabinet.



NOTE E—Turn knob of Stratoscope loop until output is maximum.

CAUTION—When aligning the short wave bands, be sure NOT to adjust at the image frequency. This can be checked as follows: Let us say the signal generator is set for 5000 KC. The signal will then be heard at 5000 KC on the dial of the radio. The image signal will be heard at 4088 KC. If the dial is set for 5000 less 912 KC, or 4088 KC, on the dial it may be necessary to increase the input signal to hear the image.



Television Sound or Phonograph Connections

Should Television programs become available in your community, the excellent audio fidelity of this radio may be used to reproduce Television sound in conjunction with any "Television Picture Receiver and Sound Converter."

On the back panel of the chassis base is a 2 hole socket at which connections are made. The leads from a television receiver or from a phono pickup can be inserted in the socket.

When phonograph or television sound reproduction is desired, button No. 1—See illustration on page 2—should be pushed in to the "Television Sound or Phono" position. For radio reception, the button should be pulled out to the "Radio" position.

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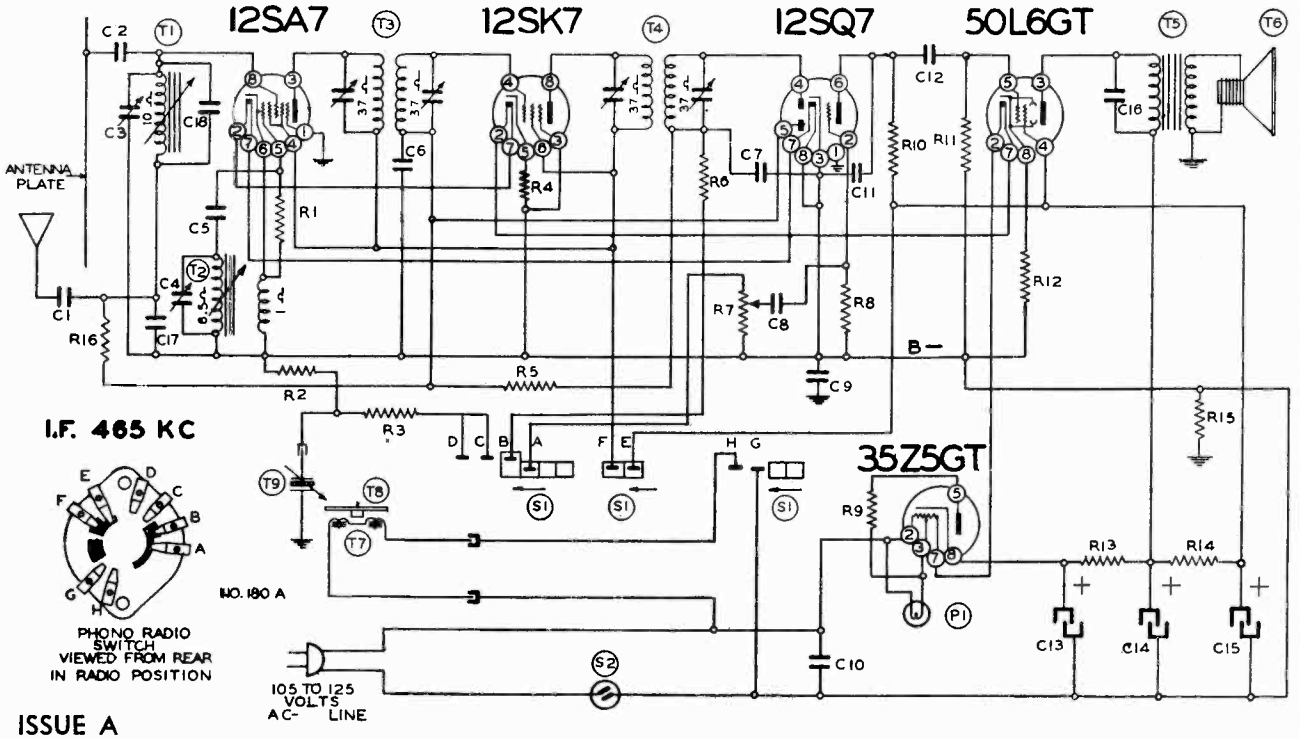
MODEL D1070



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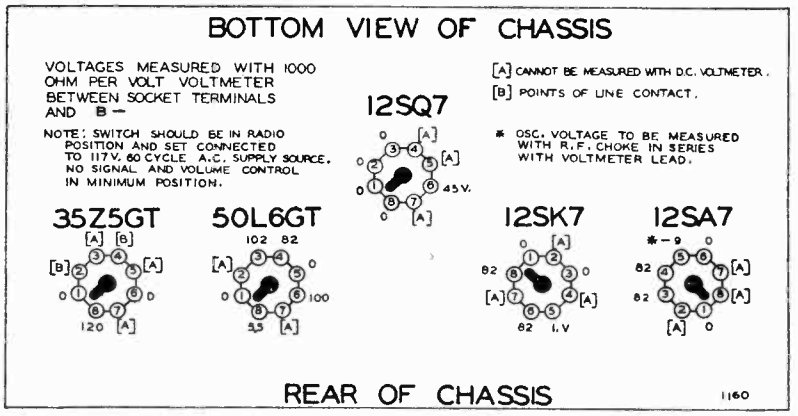


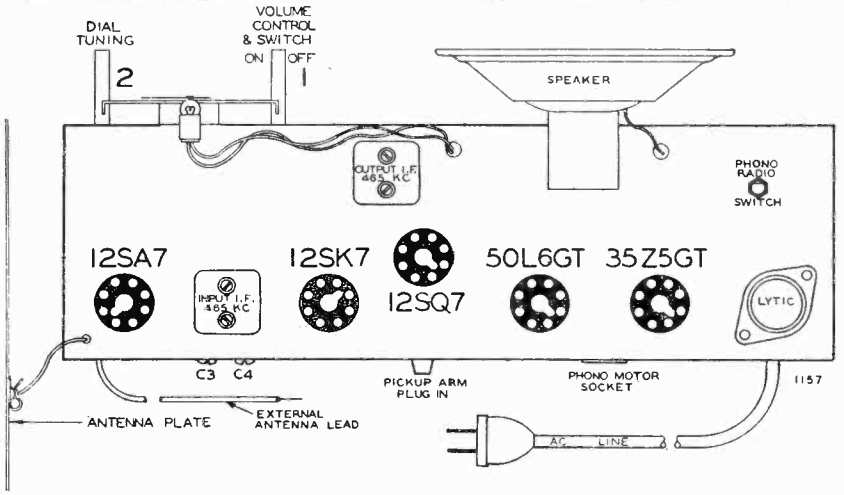


FIG. 1—TOP VIEW

Circuit Diagram Ref. No.	Part No.	Description
		RESISTORS
R1	130176	20M ohm—⅓ w.
R2	130118	600M ohm—⅓ w.
R3	130118	600M ohm—⅓ w.
R4	13056	100 ohm—⅓ w.
R5	130170	3 megohm—⅓ w.
R6	13012	50M ohm—⅓ w.
R7	101217	½ megohm—volume control
R8	130257	5 megohm—⅓ w.
R9	130215	25 ohm—½ w.
R10	1309	200M ohm—⅓ w.
R11	13037	750M ohm—⅓ w.
R12	130166	150 ohm—⅓ w.
R13	13097	200 ohm—⅓ w.
R14	130287	1200 ohm—1 watt
R15	1309	200M ohm—⅓ w.
R16	1309	200M—⅓ w.
		CONDENSERS
C1	1295	.0001 Mica Condenser
C2	129114	.0003 mfd. mica
C3	124136	Antenna Trimmer
C4	124136	Oscillator Trimmer
C5	1295	.0001 mica
C6	1009	.05 x 200 v.
C7	1295	.0001 mica
C8	10025	.002 x 600 v.
C9	100119	.1 x 400 v.
C10	1001	.1 x 400 v.
C11	12912	.00025 mica
C12	10019	.006 x 600 v.
C13	11994	40 mfd. lytic—150 w. v.
C14	11994	20 mfd. lytic—150 w. v.
C15	11994	20 mfd. lytic—150 w. v.
C16	10011	.01 x 400 v.
C17	129162	.0008 Mica Condenser
C18	129163	.000025 Ceramicon Condenser
		C3 and C4 in same unit
		C13, C14 and C15 are in same unit
		PARTS
T1	112767	Antenna Coil—Permeability tuning assembly complete
T2	112767	Oscillator Coil
T3	108140F	Input I. F. Coil—465 kc.
T4	108145D	Output I. F. Coil—465 kc.
T5	105108	Output Transformer
T6	114193	5" P.M. Speaker
T7	104206	Phono Motor
T8	12228	Turntable
T9	114194	Phono pick up arm
S1	125113	Phono Switch
S2		Switch on volume control
P1	107249	Pilot light T47
		T1 and T2 in same unit

ALIGNMENT PROCEDURE

IMPORTANT: See Aligning Instructions on Page 4

- Volume control—Maximum all adjustments.
- Connect — B of radio chassis to ground post of signal generator through .1 Mfd. condenser.
- Connect dummy antenna value in series with generator output lead.
- Connect output meter across primary of output transformer.
- 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 Mfd., and 200 Mmf.

BAND	SIGNAL GENERATOR Frequency Setting	Dummy Antenna	Connection to Radio	Position of Iron Cores (Dial Setting)	Trimmers Adjusted (in Order Shown)	Trimmer Function	Adjustment
I. F.	465 Kc.	.1 MFD.	Connect to Terminal "A" (See Fig. 4)	Iron Cores All the way out	Two trimmers on top (See Fig. 1)	Output I. F.	Adjust to maximum output
	465 Kc.	.1 MFD.	Connect to Terminal "A" (See Fig. 4)	Iron Cores All the way out	Two trimmers on top (See Fig. 1)	Input I. F.	Adjust to maximum output
BROADCAST BAND	1690 Kc.	.1 MFD.	Connect to Terminal "A" (See Fig. 4)	Iron Cores All the way out	Trimmer (C4) (See Fig. 4)	Oscillator	Adjust to maximum output
	1690 Kc.	200 MMF.	Connect to Terminal "B" (See Fig. 4)	Iron Cores All the way out	Trimmer (C3) (See Fig. 4)	Antenna	Adjust to maximum output
	1400 Kc.	200 MMF.	Connect to Terminal "B" (See Fig. 4)	Turn Dial to 1400 Kc.	Adjust position of antenna coil right or left. (See Fig. 3)	Antenna Coil Adjustment	(See Note "A") Adjust to maximum output
	1690 Kc.	200 MMF.	Connect to Terminal "B" (See Fig. 4)	Turn Dial to 1690 Kc.	Adjust trimmer (C3) (See Fig. 4)	Antenna	Check for tracking (See Note "B")

NOTE "A"—The antenna coil assembly is made so that it is movable right or left. When making the adjustment as given in the alignment procedure move the coil assembly very slowly. It can be moved by hand or by pivoting one edge of the blade of a screwdriver in the hole and engaging the blade in the gear teeth of the coil form.

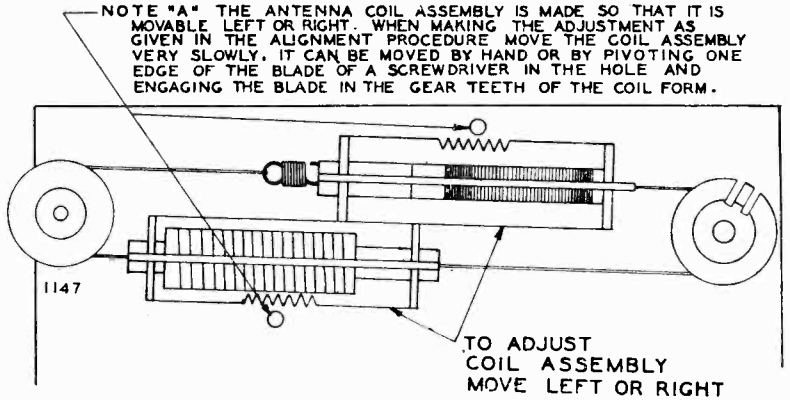


FIG. 3.—TUNING ASSEMBLY

NOTE "B"—After the antenna coil has been tracked at 1400 Kc. it is necessary to check the antenna trimmer (C3) adjustment again at 1690 Kc. If no appreciable change in trimmer adjustment is made the coil is in track, if the trimmer requires considerable change it will be necessary to again adjust the position of the antenna coil at 1400 Kc. These two adjustments should be tried several times until no change of trimmer adjustment is required at

FREQUENCY RANGE
535 to 1690 K.C.

Power Consumption.....Radio Only 30 Watts

Power Output.....900 Milliwatts Undistorted, 1.7 Watts Maximum

Intermediate Frequency.....465 K.C.

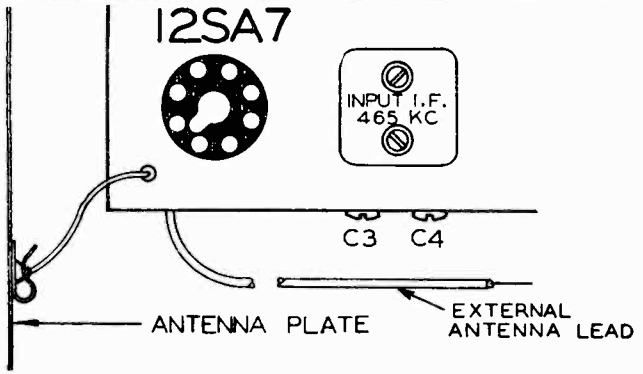


FIG. 4.—TRIMMERS

TUBES:

The tube complement of this chassis consists of the following octal base glass and metal tubes.

The type and function of each tube is as follows.

1—Type 12SA7 Mixer, First Detector-oscillator.

1—Type 12SK7 I. F. Amplifier.

1—Type 12SQ7 Second Detector, A.V.C. and First Audio.

1—Type 50L6GT Beam Output Amplifier.

1—Type 35Z5GT Rectifier.

SPECIFICATIONS — MOD. D-934

Input Voltages and Currents

"A" Battery (LO Operation)	1.5 volts—250 Ma.
"B" Battery (LO Operation)	90 volts—10.5 to 12 Ma.
"A" Battery (HI Operation)	1.5 volts—400 Ma.
"B" Battery (HI Operation)	90 volts—13.5 to 17.5 Ma.
Dial Lamp Battery (HI & LO Operation)	1.5 volts—1 Amp.

Power Output

(LO Operation)	70 Milliwatts Undistorted
(LO Operation)	200 Milliwatts Maximum
(HI Operation)	250 Milliwatts Undistorted
(HI Operation)	270 Milliwatts Maximum

Selectivity	38 KC Broad at 1000 Times Signal
Intermediate Frequency	456 KC.
Speaker	6" P.M. Dynamic

Tuning Frequency Range

B Range	528 to 1730 KC
D Range	5750 to 18300 KC

Sensitivity (For .05 Watt Output)

B Range	.25 Microvolts Average
D Range	80 Microvolts Average

From an inspection of the circuit diagram it will be noted the LO operation is that of a 4 tube radio—one output tube and the phase inverter having their filaments open circuited. The HI position permits normal operation with all 6 tubes operating, and with push-pull output.

ALIGNMENT PROCEDURE

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

SIGNAL GENERATOR FREQUENCY SETTING	SIGNAL GENERATOR CONNECTION AT RADIO	DUMMY ANTENNA	BAND SWITCH SETTING	CONDENSER OR DIAL SETTING	ADJUST TRIMMERS TO MAXIMUM
I. F.					2nd I.F. (C13) & (C14)
456 KC	Grid of 1st Det.	.1 mf.	B Range	Turn Rotor to Full Open	1st I.F. (C11) & (C12)
RANGE B					
1730 KC	Antenna Lead	200 mmf.	B Range	Turn Rotor to Full Open	Oscillator Range B (C5)
1500 KC	Antenna Lead	200 mmf.	B Range	Turn Rotor to Max. Output Set Indicator to 1500 KC—See Note A	Ant. Range B (C7)
600 KC	Antenna Lead	200 mmf.	B Range	Turn Rotor to Max. Output	600 KC (C6) Rock Rotor—See Note B
RANGE D					
18,300 KC	Antenna Lead	400 Ohm	D Range	Turn Rotor to Full Open	Oscillator Range D (C4)
17,000 KC	Antenna Lead	400 Ohm	D Range	Turn Rotor to Max. Output	Ant. Range D (C3) Rock Rotor—See Note B
6000 KC	Antenna Lead	400 Ohm	D Range	Turn Rotor to Max. Output	6000 KC (C2) Rock Rotor—See Note B

Volume Control—Maximum All Adjustments.

Connect Radio Chassis to Ground Post of Signal Generator with a Short Heavy Lead.

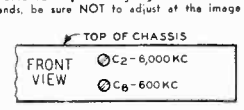
Attenuate the signal from the signal generator to prevent the leveling-off action of the AVC.

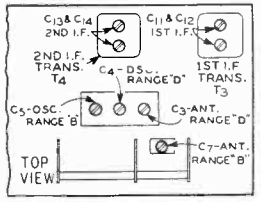
After each range is completed, repeat the procedure as a final check.

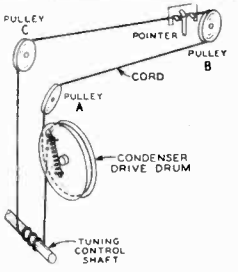
NOTE A—If the pointer is not at 1500 KC on the dial, slip the drive cord out from under one of the end clamps on the pointer head. Move pointer to 1500 KC on the dial and replace drive cord under end clamp.

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

CAUTION—When aligning the short wave bands, be sure NOT to adjust at the image frequency. This can be checked as follows: Let us say the signal generator is set for 15,000 KC. The signal will then be heard at 15,000 KC on the dial of the radio. The image signal, which is much weaker, will be heard at 15,000 less 912 KC, or 14,088 KC on the dial. It may be necessary to increase the input signal to hear the image.







Drive Cord Replacement

Tie one end of the new drive cord to the tension spring.

Turn the gang condenser to the full open position. Secure the free end of the spring over the hook on the condenser drive drum—See illustration. Pass the cord through the hole in the drum rim and over pulleys A, B, and C as shown. Wind 3½ turns in a clockwise direction (from front of chassis) around the tuning control shaft, progressing toward the chassis. Pull drive cord taut. Then wind one complete turn in a clockwise direction (from right side of chassis) around condenser drive drum. This turn must be wound on the left side (from front of chassis) of the drive drum groove. Pass cord through hole in drum rim and tie to tension spring as shown.

Dial Pointer Attachment—Tune in a station of known frequency. Set the pointer at this frequency on the dial scale and secure pointer to cord—See illustration.

Procedure for Setting the Station Buttons — MOD. D-934

Setting a Station Button

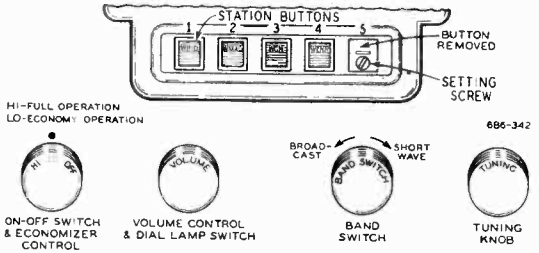
Pull the button at the left (No. 1) off the shaft. When this is done, the locking screw under the shaft will be exposed.

Loosen this screw with a small screwdriver by turning several turns in a counter-clockwise direction. Continue to press in firmly on the screwdriver, thus holding the station button shaft depressed. Select the first station from the list you have prepared and carefully tune in this station by means of the manual tuning knob.

After the stations are set and the mechanism is locked, tune in each of them by depressing the proper button. If any of them does not appear to be properly tuned in after the button has been depressed, reset the station for that button following the procedure as outlined above. If at any time you wish to change the setting of a button from one station to another, repeat the above procedure. Changing the setting of one button will not affect the setting of the others.

Continue to press in firmly on the screwdriver and lock the mechanism by turning the locking screw in a clockwise direction until it is tight. The station is now set on this button.

Proceed in the same manner to set stations on any of the remaining buttons.



SPECIFICATIONS — MOD. D-937

Input Voltages and Currents

"A" Battery	1.5 Volts—.30 Amperes
"B" Battery	90 Volts—12 to 15 Ma

Power Output — 140 Milliwatts Undistorted

Selectivity — 41 KC Broad at 1000 Times Signal

Intermediate Frequency	456 KC.
Speaker	6" P.M. Dynamic
Tuning Frequency Range	540 to 1600 KC.
Sensitivity (For .05 Watt Output) Portable Model	20 Microvolts Per Meter Average

ALIGNMENT PROCEDURE — MOD. D-937 & D-938

Volume Control—Maximum All Adjustments. Allow Chassis and Signal Generator to "Heat Up" for several Minutes.

SIGNAL GENERATOR FREQUENCY SETTING	SIGNAL GENERATOR CONNECTION AT RADIO	DUMMY ANTENNA	CONDENSER SETTING	ADJUST TRIMMERS TO MAXIMUM (See Trimmer Illustration)
456 KC	Grid of 1st Det.	.1 mf.	Turn rotor to full open	1st I.F. (C6) & (C7) 2nd I.F. (C11) & (C12)
1600 KC	Grid of 1st Det.	.1 mf.	Turn rotor to full open	Oscillator (C2)
1500 KC	None—See Note		Turn rotor to max. output	Antenna (C1)

TRIMMERS C8 & C9 FOR MODEL 938

The following equipment is required for aligning:

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

Output Indicating Meter; Non-Metallic Screwdriver.

Dummy Antenna—.1 mf.

NOTE—Connect a loop approximately one foot in diameter across the antenna and ground posts of the signal generator. Secure the back in place on the cabinet. Connections for the output meter may be made through the opening for the outside antenna and ground connecting posts. This opening is at the bottom of the cabinet near the back. Place radio approximately 3 feet from loop so as to pick up signal. Radio should not be in proximity to any metal (metal bench, etc.).

CALIBRATION (For model with pointer in back of celluloid dial scale)—To obtain dial scale calibration, tune in an 800 KC signal. The pointer should be at the 800 KC mark on the dial. IF THE POINTER IS AT A HIGHER KC MARK THAN 800 KC, grasp the drive cord below the tension spring. Hold the tuning control shaft motionless and slowly pull the drive cord down until the pointer is at the 800 KC mark. IF THE POINTER IS AT A LOWER KC MARK THAN 800 KC, grasp the drive cord above the tension spring. Hold the tuning control shaft motionless and slowly pull the drive cord up until the pointer is at the 800 KC mark.

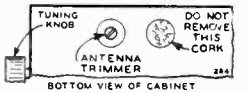
CALIBRATION (For models with pointer in front of dial scale)—To obtain dial scale calibration, tune in an 800 KC signal. The pointer should be at the 800 KC mark on the dial. If it is not, loosen the pointer screw, set the pointer at the 800 KC mark and retighten the pointer screw.

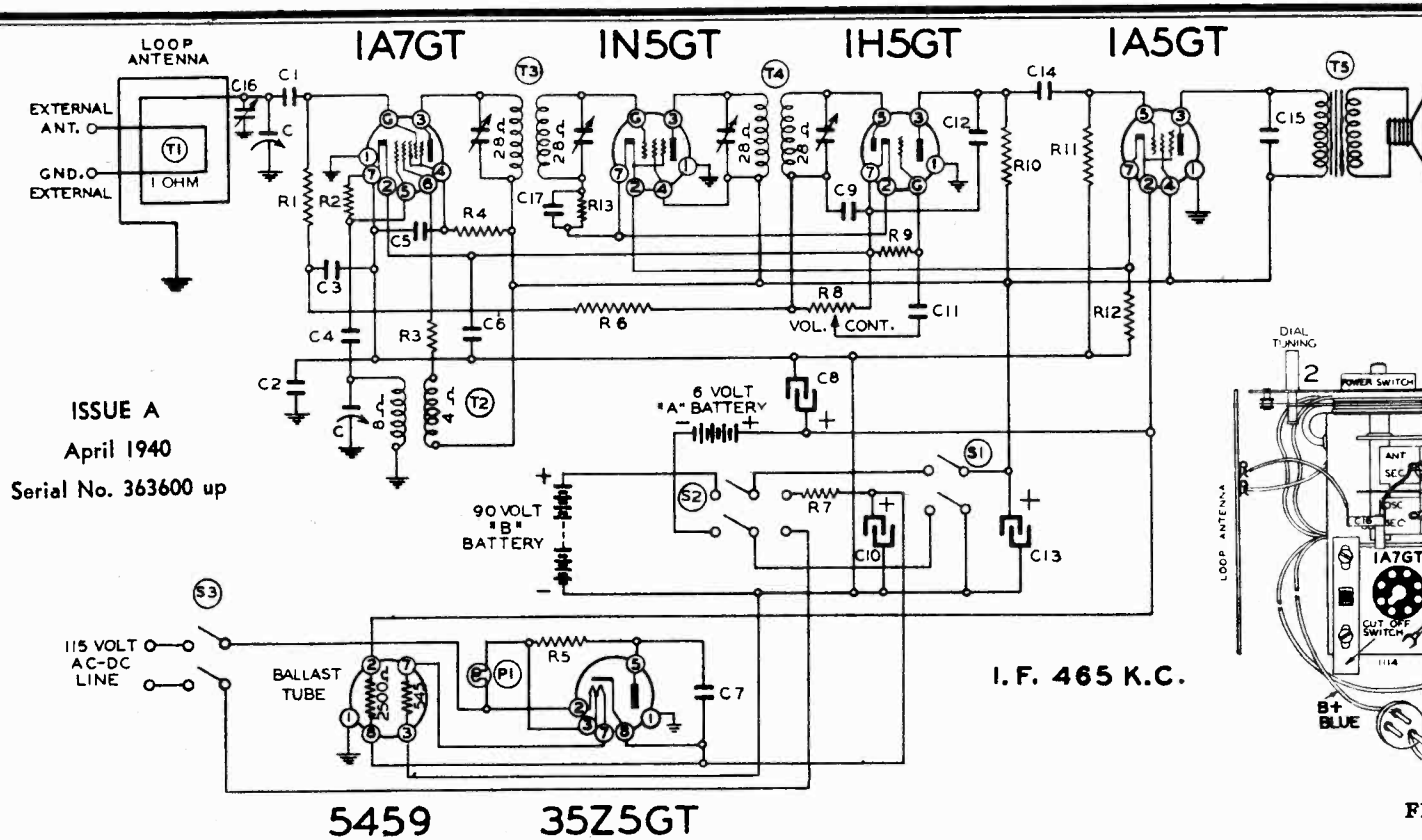
Adjusting Antenna Trimmer

After the batteries are installed and the back of the cabinet is in place, adjust the antenna trimmer.

Accurately tune in a weak station signal between 1400 and 1500 KC on the dial. With a screwdriver turn the adjusting screw of the antenna trimmer up or down until maximum output is obtained. This trimmer is reached through an opening in the bottom of the cabinet—see illustration. CAUTION: Do not remove the cork from the other opening at the bottom of the cabinet.

Readjust the antenna trimmer when a new set of batteries is installed.





ALIGNMENT FREQUENCIES:
IF - 465 KC
B-C Osc. - 1550 KC
B-C Ant (C-16) - 1400 KC

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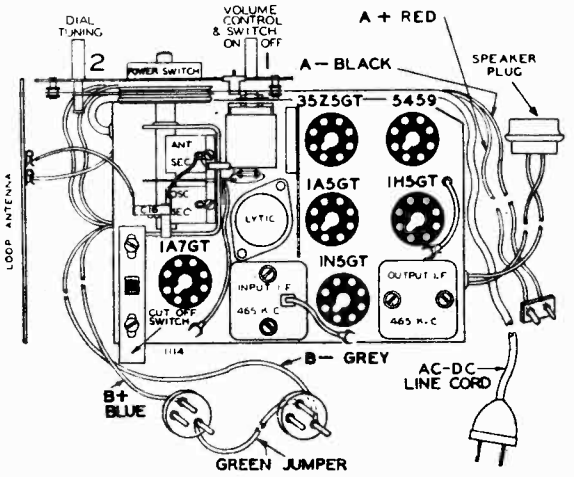
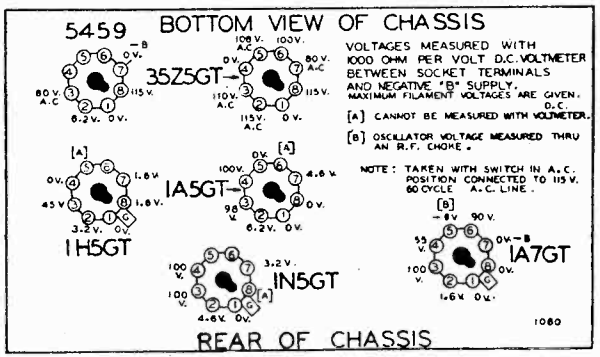


FIG. 2 — TOP VIEW



Circuit Diagram Ref. No.	Part No.	RESISTORS
R1	13038	2 megohm—½ w.
R2	130266	200M ohm—½ w.
R3	13018	4M ohm—½ w.
R4	130208	40M ohm—½ w.
R5	130215	25 ohm—½ w.
R6	130170	3 megohm—½ w.
R7	130129	2500 ohm—½ w.
R8	101210	1 megohm volume control
R9	130257	5 megohm—½ w.
R10	1303	500M ohm—½ w.
R11	13038	2 megohm—½ w.
R12	13092	1M ohm—½ w.
R13	130100	150M Ohm—½ w.
		CONDENSERS
C	102125	2 gang variable condenser
C1	12912	.00025
C2	100110	.2 mfd. x 400 v.
C3	1009	.05 x 200 v.
C4	12912	.00025
C5	1009	.05 x 200 v.
C6	10020	.1 x 200 v.
C7	10011	.01 x 400 v.
C8	119104	Lytic 200 mfd. x 6 w. v.
C9	1295	.0001 mfd.
C10	119104	Lytic 40 mfd. x 150 w. v.
C11	10025	.002 x 600 v.
C12	1292	.0005 mfd.
C13	119104	Lytic 20 mfd. x 150 w. v.
C14	10011	.01 x 400 v.
C15	10025	.002 x 600 v.
C16	124116	Adjustable antenna trimmer
C17	10026	.02 x 400 v.
		C8, C10 and C13 in same unit
		PARTS
T1	111171	Loop Antenna
T2	110144	Oscillator Coil
T3	108171B	Input I. F. Coil—465 kc.
T4	108172	Output I. F. Coil—465 kc.
T5	114189	Speaker with output transformer
S1	101210	Switch on volume control
S2	125106	Power Switch
S3	125107	Cut-off switch in line cord
P1	107249	Pilot light T47

TUBES —

The tube complement of this chassis consists of the following tubes.

The type and function of each tube is as follows:

1A7GT Mixer, First Detector-oscillator.

1N5GT Remote Cut-Off Pentode, 1st I. F. Amplifier (465 K. C.).

1H5GT Second Detector, A.V.C. 1st Audio.

1A5GT Output Amplifier.

35Z5GT Rectifier.

5459 Ballast Resistor.

MODEL D-745

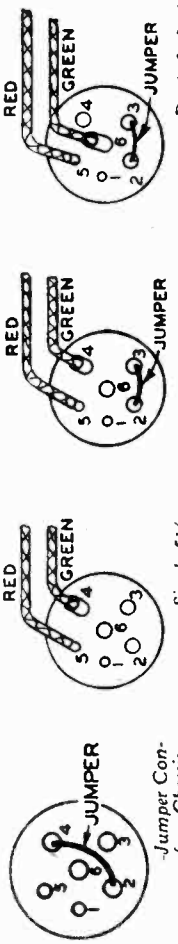
WESTERN AUTO SUPPLY CO.

Calibrating the Radio

To calibrate the radio, tune in a station of known frequency. At the back of the control head is the calibration screw—see Fig. 10. Remove the pilot lamp assembly. Insert a fine blade screwdriver and turn this screw until the pointer on the dial scale is at the frequency of the station being received. The knob must be held during this adjustment.

If the control head is inaccessible it may be calibrated by setting the pointer from the front. Remove the crystal by inserting a knife blade under the lower edge. Loosen the pointer screw, set the pointer and retighten.

Roof Speaker and Dual Speaker Connections

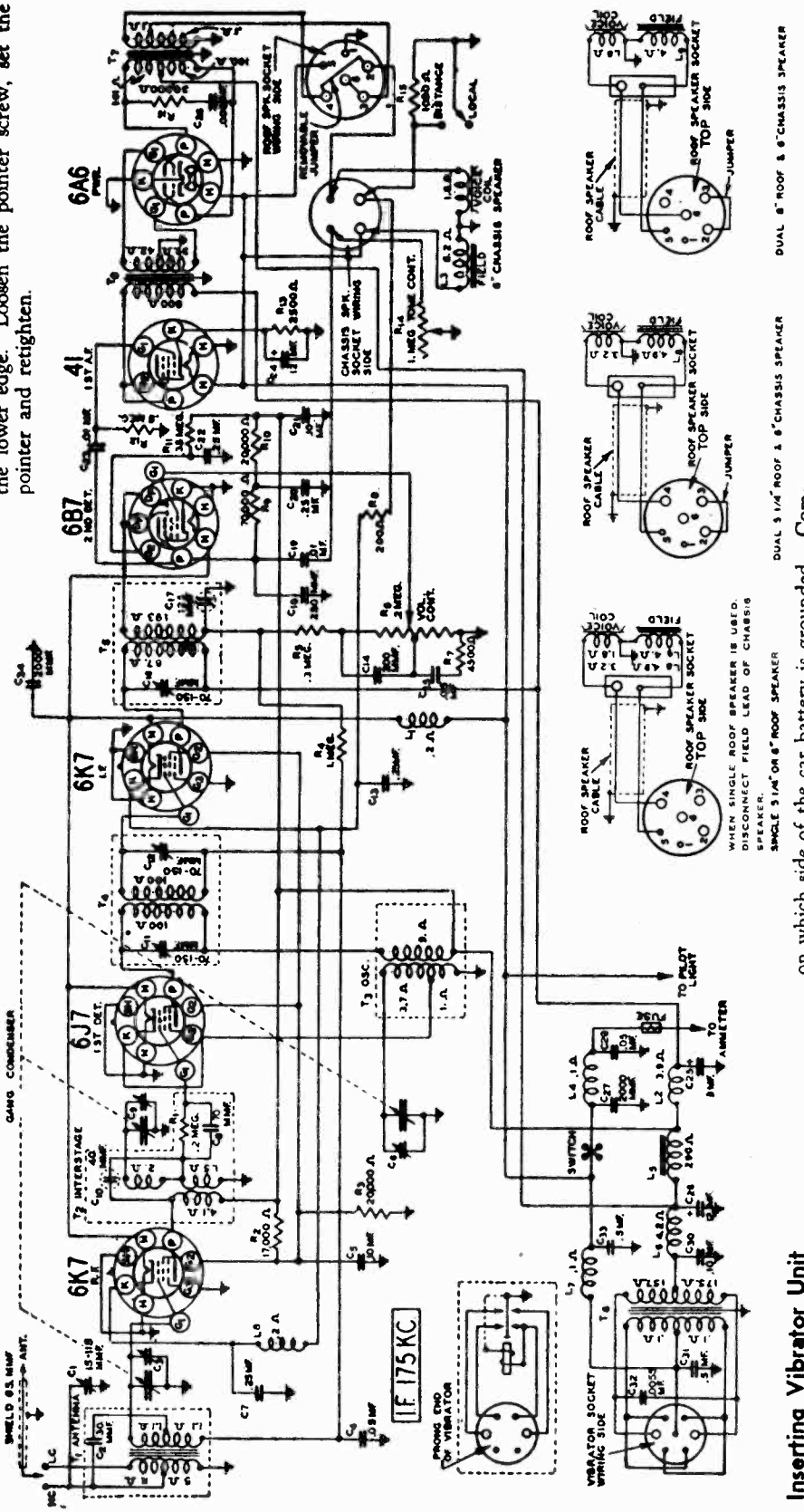


Jumper Connection for Chassis Speaker only

Single 5¼ Inch Roof Speaker

Dual 5¼ In. Roof & 6 In. Chassis Speakers

Dual 8 Inch Roof and 6 Inch Chassis Speakers.



Inserting Vibrator Unit

Note that the vibrator unit can be inserted in two ways. The proper method of insertion will depend on which side of the car battery is grounded. Complete information is shown on the label on the vibrator.

CHANGES IN LATER MODELS

June, 1937

Later models of the Series have changes incorporated in them which are explained below. The models which have these changes may be identified by the issue letter which is a large letter stamped on top of the chassis base. The tube arrangement label on the chassis case cover also shows this issue letter.

When ordering parts, it is important that the issue letter be noted and the correct part number, as shown in the parts list, be specified.

The "D" issue Series is different from the "B" and "C" The gang condenser used in the "D" issue radios does not have the cut plate oscillator section. A padding condenser (600 KC) was added in series with the oscillator section of this gang condenser and the oscillator coil. The padding condenser is a part of the 2nd I. F. trimmer unit and is mounted in the 2nd I. F. coil can.

The capacity (C17) shown within a dotted circle in the 2nd I.F. coil assembly on the schematic has been changed to an actual part as shown in the supplementary parts list

The antenna, R.F. Interstage, oscillator, and 2nd I.F. coil assemblies have been changed and have been given new part numbers as shown in the supplementary parts list.

SUPPLEMENTARY REPLACEMENT PARTS

The PARTS of the Series are used on the Series "D" issue Radio with the following EXCEPTIONS: PRICES ARE SUBJECT TO CHANGE WITHOUT NOTICE

THE FOLLOWING NEW PARTS ARE USED:

No.	Code	Description	List Price
9A859	T1	Antenna Transformer and Can Assembly.....	$1.65
9A861	T2	R. F. Interstage Transformer and Can Assembly.....	1.75
9A862	T3	Oscillator Coil and Can Assembly.....	.95
9A858	T5	2nd I. F. Transformer and Can Assembly.....	2.35
47X57	C17	100 mmf. Molded Condenser.....	.10
17A79	(C16 (	30-100 mmf. 2nd I.F. Trimmer) 900-1300 mmf. Oscillator 600 KC Padder) ...	.45
14A77		3 Section Gang Condenser Complete with Drive Gears.....	5.05

THE FOLLOWING PARTS OF THE SERIES ARE NOT USED ON THE SERIES "D" ISSUE RADIO:

9A740) 9A771)	or T1	Antenna Transformer and Can Assembly.....	$1.65
9A741) 9A765)	or T2	R.F. Interstage Transformer and Can Assembly.....	1.70
9A742) 9A772)	or T3	Oscillator Coil and Can Assembly.....	.85
9A744	T5	2nd I.F. Coil and Can Assembly.....	1.60
17A65	C16	30-100 mmf. 2nd I.F. Trimmer.....	.20
14A65		3 Section Gang Condenser Complete with Drive Gears.....	5.85

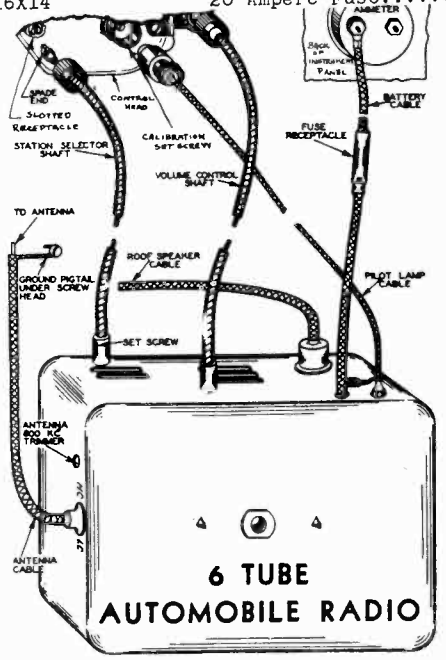
The Following Changes apply to all Issues of the Series 6J:

THE FOLLOWING NEW PARTS ARE USED:

46X213	C29	.5 mf. 180 volt Tubular Condenser.....	$0.30
16X16		15 Ampere Fuse.....	.10

THE FOLLOWING PARTS ARE NOT USED:

46X207	C29	.5 mf. 180 volt Tubular Condenser.....	$0.30
16X14		20 Ampere Fuse.....	.10



General Installation View

Alignment Procedure

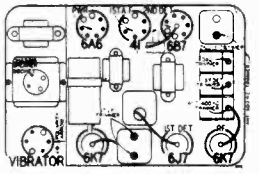
Set the signal generator for 175 KC and connect the output of the signal generator through a .05 mf. condenser to the stator of the 1st detector section of the tuning condenser. Set the volume control at the maximum position and attenuate the signal from the signal generator to prevent the levelling off action of the AVC. Then adjust the three IF trimmers until maximum output is obtained

Set the signal generator for 1581 KC. Turn the rotor of the tuning condenser to the full open position. Insert the antenna plug with the mark on the high capacity (HC) side. Connect the shielded antenna lead from the chassis through a 120 mmf. condenser to the antenna post of the signal generator. Adjust the trimmer of the oscillator section of the three gang condenser until maximum output is obtained.

Set the signal generator for 1400 KC. Turn the rotor of the tuning condenser carefully until maximum output is obtained. Adjust the 1st detector and antenna 1400 KC trimmers for maximum output. Do not change the setting of the oscillator trimmer.

Then set the signal generator for 600 KC and adjust the 600 KC antenna trimmer to maximum (see Fig. 10 for location of this trimmer).

After the alignment procedure is completed, the antenna plug may be withdrawn and reinserted on the LC side if a low capacity (70 mmf.) car antenna is used.



Location of Tubes and Vibrator

Adjusting Antenna 600 KC Trimmer

Tune in a weak signal at approximately 600 KC with the volume control about three-fourths on. Turn the adjusting screw of the antenna 600 KC trimmer up or down until maximum output is obtained. See Fig. 9 for location of this trimmer.

Antenna

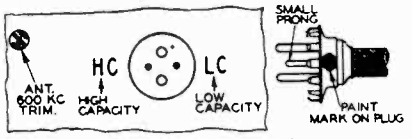


Fig. 9—Antenna Plug Insertion

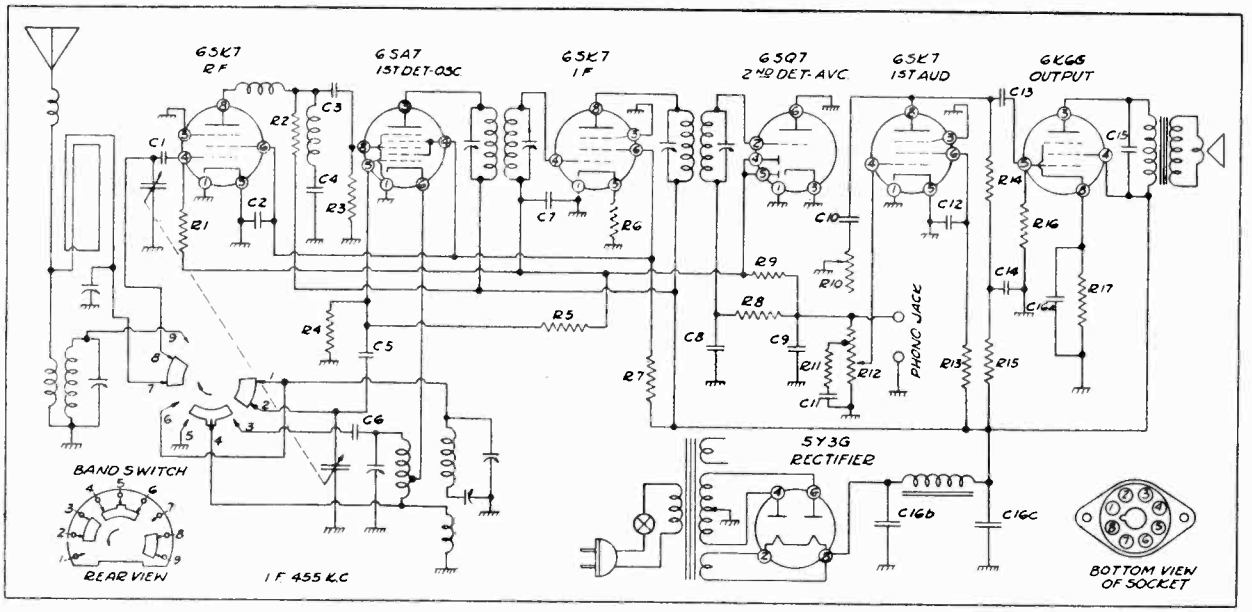
IMPORTANT—The antenna plug can be inserted in two ways depending on whether the antenna is of high or low capacity.

If the total capacity of the antenna and shielded lead is approximately 200 mmf., which would be the case in a running board or ordinary roof antenna (not metal roof), insert the antenna plug with the mark on the HC side—See Fig. 9.

If the total capacity of the antenna and shielded lead is approximately 70 mmf., such as is the case if a "fish pole" antenna is used, insert the antenna plug with the mark on the LC side.

WESTERN AUTO SUPPLY CO.

MODEL D-1003



Band switch shown in broadcast position in schematic and in short wave position in pictorial view in lower left corner.

RESISTORS

No.	Ohms	Watts	No.	Ohms	Watts
R1	500,000	¼	R10	500,000	T.C.
R2	4,000	½	R11	10,000	¼
R3	100,000	½	R12	500,000	V.C.
R4	25,000	½	R13	2,000,000	¼
R5	5,000,000	¼	R14	250,000	¼
R6	100	¼	R15	50,000	¼
R7	15,000	2	R16	500,000	¼
R8	50,000	¼	R17	600—10%	½
R9	1,000,000	¼			

CONDENSERS

No.	Capacity (Mfd.)	Volts	No.	Capacity (Mfd.)	Volts
C1	.0001	Mica	C10	.002	600
C2	.05	400	C11	.05	200
C3	.0001	Mica	C12	.25	400
C4	.00006—5%	Mica	C13	.01	400
C5	.0001	Mica	C14	.25	400
C6	.003—5%	Mica	C15	.005	600
C7	.05	200	C16a	20.	25
C8	.0001	Mica	C16b	20.	350
C9	.00025	Mica	C16c	20.	350

SERVICE NOTES

Voltages taken from the different points of the circuit to 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, on the 300 volt scale. These voltages are clearly indicated on the voltage chart.

All voltages should be measured with 117 volts A.C. input to receiver. Resistance and actual connections of coils and transformers, electrolytic condenser information and speaker data are given under Service Information.

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

SERVICE INFORMATION

Speaker (Part No. P4206) 6½" PM.

D. C. voice coil resistance..... 3.6 ohms
Voice coil impedance at 400 cycles..... 4.0 ohms

S. W. Antenna Coil (Part No. P3198)

Looking at the connection end starting at the chassis in a clockwise direction the terminals are: No. 1, plate; No. 2, B+; No. 3, grid; No. 4, pad.
Primary—No. 3 and No. 4—Resistance..... .08 ohm
Secondary—No. 1 and No. 2—Resistance..... .37 ohm

Oscillator Coil (Part No. P4194)

Looking at the mounting strip end in a clockwise direction starting at the chassis, the terminals are: No. 1, ground; No. 2, cathode; No. 3, open; No. 4, pad; No. 5, switch; No. 6, grid; No. 7, grid; No. 8, open.
B.C. Primary—No. 1 and No. 5—Resistance..... .29 ohm
S.W. Primary—No. 5 and No. 2—Resistance..... .06 ohm
B.C. Secondary—No. 4 and No. 6—Resistance..... 5.7 ohms
S.W. Secondary—No. 2 and No. 7—Resistance..... .08 ohm

First I.F. Transformer (Part No. P4108)

Primary—Blue, plate; red, B+—Resistance..... 18.2 ohms
Secondary—White, grid; black, AVC—Resistance..... 15.1 ohms

Second I.F. Transformer (Part No. P4109)

Primary—Blue, plate; red B+—Resistance..... 20.8 ohms
Secondary—White, diode; black, AVC—Resistance..... 17.4 ohms

VOLTAGE CHART

All voltages measured with a 1,000 ohm per volt meter on the 300 volt scale. Line voltage 117 volts A.C. Volume control maximum and no signal tuned in.

	Volts
6SK7 (RF) TUBE	
Plate (8) to ground	208
Screen (6) to ground	93
6SA7 TUBE	
Plate (3) to ground	255
Screen (4) to ground	93
6SK7 (IF) TUBE	
Plate (8) to ground	255
Screen (6) to ground	93
6SK7 (AF) TUBE	
Plate (8) to ground	20
Screen (6) to ground	10
6K6G TUBE	
Plate (3) to ground	240
Screen (4) to ground	258
Cathode (8) to ground	18
5Y3G TUBE	
Filament (8) to ground	266

MODEL D-1003

WESTERN AUTO SUPPLY CO.

ISSUE A
MAY 1940
Serial No.
D-69,751 & Up

SEVEN TUBE AC SUPERHETERODYNE RECEIVER

Broadcast and Short Wave Bands

Frequency Range 535-1630 Kilocycles and 5,700-18,100 Kilocycles

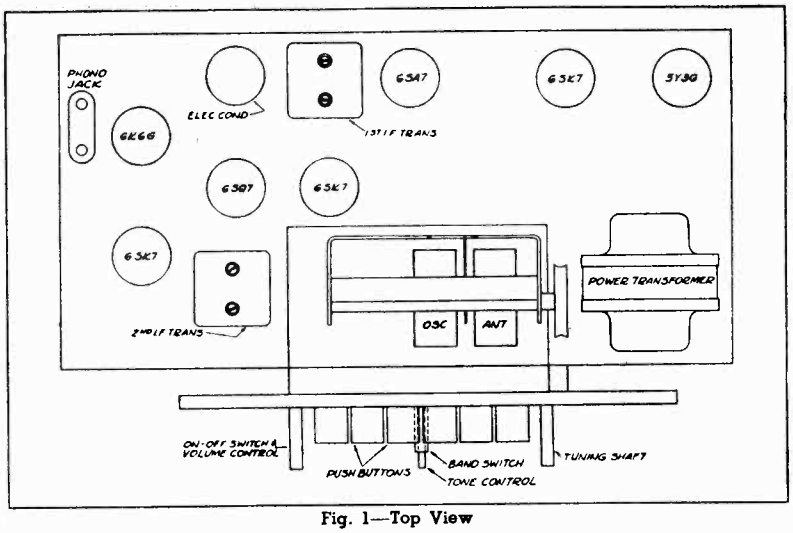


Fig. 1—Top View

TUBE COMPLEMENT

The tube complement of this receiver consists of the following tubes.

1—Type 6SK7—Remote cut-off Pentode as RF Amplifier.

1—Type 6SA7—Pentagrid Converter as First Detector and Oscillator.

1—Type 6SK7—Remote cut-off Pentode as an IF amplifier (455 KC).

1—Type 6SQ7—Duplex Diode Triode Second Detector and A.V.C.

1—Type 6SK7—Remote cut-off Pentode as First Audio.

1—Type 6K6G—Power Amplifier.

1—Type 5Y3G—Rectifier.

PROCEDURE FOR SETTING UP PUSH BUTTONS

There are six push buttons by means of which six stations may be selected. Make a list of six stations tuned in regularly. Loosen one of the push buttons by inserting a screw driver thru the center hole in the push button to the locking screw and turn the locking screw counter-clockwise one full turn and push in, while holding this screw in tune in the desired station by means of the station selector.

Turn the selector very slowly back and forth until the signal is clearest. Now while still holding the above screw in, tighten it by turning clockwise. Release and turn the station selector to one end of the dial; then check the button by pushing it down and if the station is tuned to the center of the area on the dial covered by the station the adjustment is correct.

Release the push button and repeat the above procedure for the remaining buttons.

If it is desired to change a button to a different station simply re-set by repeating the above procedure.

Punch the correct station call letter tabs from the set of sheets supplied and insert them from the side into the grooves in the front of the push buttons. Punch six celluloid squares from the sheet supplied and insert them in the afore mentioned grooves over the station call letter tabs.

The dial is now set up for quick tuning and all that is necessary is to push the button of the desired station down and then release.

ALIGNMENT PROCEDURE

- Volume control—Maximum all adjustments.
- Connect radio chassis to ground post of signal generator with a short heavy lead.
- Connect dummy antenna value in series with generator output lead.
- Connect output meter across primary of output transformer.
- 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 mfd., 200 mmf., 400 ohms.

BAND	SIGNAL GENERATOR Frequency Setting	SIGNAL GENERATOR Dummy Antenna	Connection to Radio	Variable Condenser Setting	Trimmers Adjusted (In Order Shown)	Trimmer Function	Adjustment
I. F.	455 KC.	.1 Mfd.	Grid of 6SK7 I.F. tube	Rotor full open (Plates out of mesh)	Two trimmers on top (See Fig. 1)	Output I. F.	Adjust to maximum output
	455 KC.	.1 Mfd.	Grid of 6SA7 tube	Rotor full open (Plates out of mesh)	Two trimmers on top (See Fig. 1)	Input I. F.	Adjust to maximum output
BROADCAST	1,630 KC.	200 Mmf.	Antenna lead	Rotor full open (Plates out of mesh)	Trimmer—Upper left, front of chassis	Oscillator	Adjust to maximum output
	1,400 KC.	200 Mmf.	Antenna lead	Set dial at 1400 KC.	Trimmer—Lower right, front of chassis	Broadcast Antenna	Adjust to maximum output
	600 KC.	200 Mmf.	Antenna lead	Set dial at 600 KC.	Trimmer—Underside of chassis, center	Oscillator Series Pad.	Adjust to maximum rock dial See Note 'A'
SHORT WAVE	18,100 KC.	400 ohms	Antenna lead	Rotor full open (Plates out of mesh)	Trimmer—Lower left, front of chassis	Short Wave Oscillator	Adjust to receive signal
	16,000 KC.	400 ohms	Antenna lead	Tune signal	Trimmer—Upper right, front of chassis	Short Wave Anterna	Adjust to maximum output

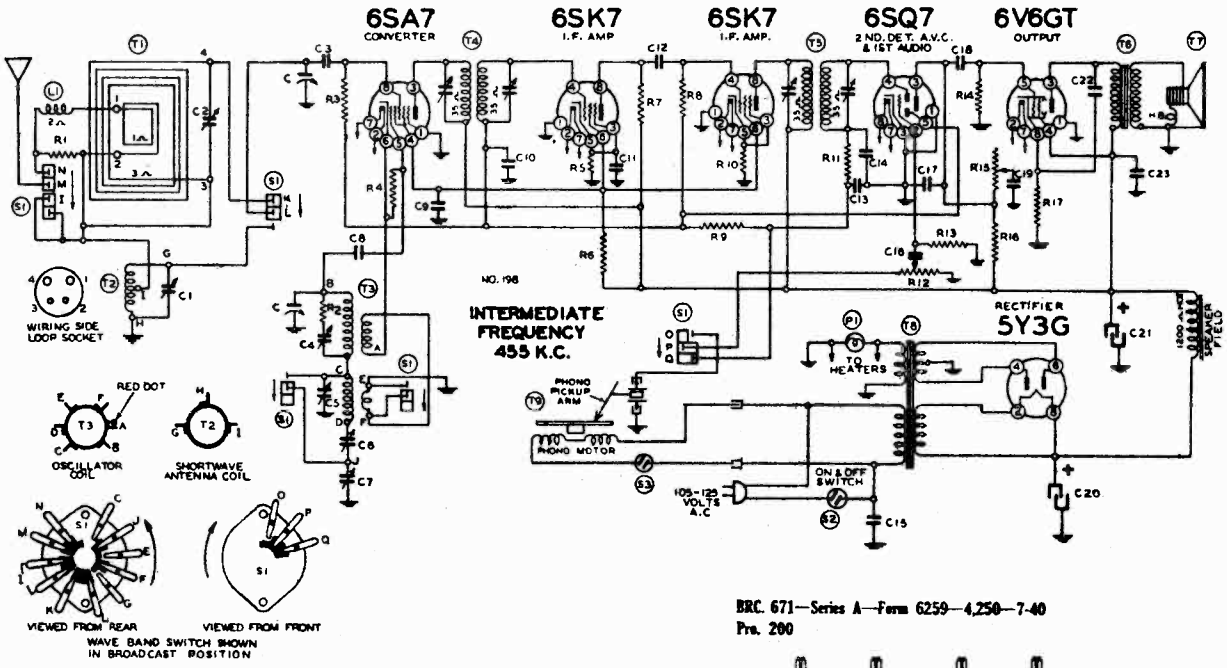
Note "A"—Turn the dial back and forth slightly (rock) and adjust trimmer until the peak of intensity is obtained.
Attenuate the signal from the signal generator to prevent the leveling-off action of the A.V.C.
Do not bend variable condenser to correct tracking.

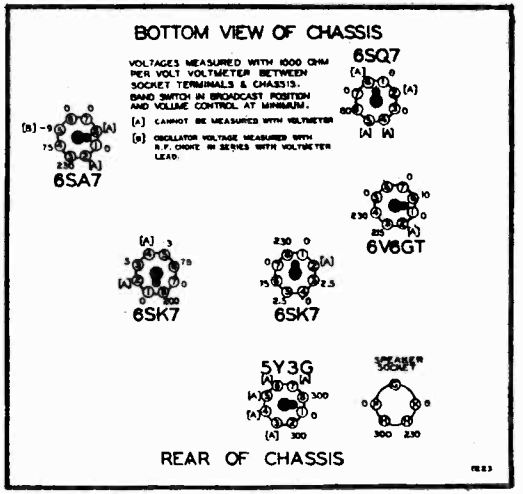
Frequency Range — 535 to 1630 and 5,700 to 18,100 K.C.
Power output 2.6 watts undistorted — 4.1 watts maximum.
Intermediate Frequency 455 K.C.
Power Consumption—60 watts.

Code No.	Part No.	Description
		RESISTORS
R1	13071	4000 ohm—½ w.
R2	130128	20 ohm—½ w.
R3	13019	1 megohm—½ w.
R4	130236	30M ohm—½ w.
R5	130283	750 ohm—½ w.
R6	130324	18M ohm—1 watt
R7	130218	5M ohm—½ w.
R8	13020	100M ohm—½ w.
R9	130170	3 megohm—½ w.
R10	130222	350 ohm—½ w.
R11	13012	50M ohm—½ w.
R12	101232	1 megohm volume control
R13	130223	10 megohm—½ w.
R14	1303	500M ohm—½ w.
R15	101231	1 megohm tone control
R16	130172	250M ohm—½ w.
R17	130323	270 ohm—1 watt
		CONDENSERS
C	102137	Two gang variable condenser
C1	124149	S. W. Antenna trimmer
C2	124149	B. C. Antenna trimmer
C3	1292	.0005 mica
C4	124142	S. W. Oscillator trimmer
C5	124142	B. C. Oscillator trimmer
C6	124146	B. C. Padding Condenser
C7	124146	S. W. Padding Condenser
C8	12960	150 mmfd. mica
C9	10013	.05 x 400 v.
C10	10022	.05 x 200 v.
C11	1009	.05 x 200 v.
C12	1292	.0005 mica
C13	129161	.0001 mica
C14	129161	.0001 mica
C15	10061	.02 x 600 v.
C16	10025	.002 x 600 v.
C17	12912	.00025 mica
C18	10026	.02 x 400 v.
C19	10071	.004 x 600 v.
C20	119115	16 mfd. x 400 w. v. lytic
C21	119115	16 mfd. x 400 w. v. lytic
C22	10019	.006 x 600 v.
C23	1001	.1 x 400 v.

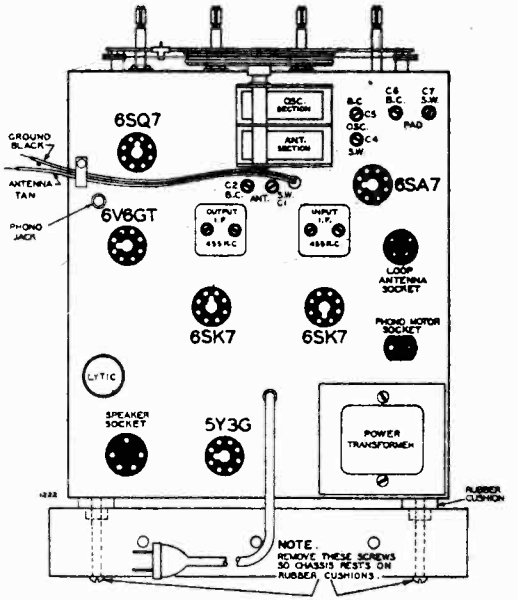
C1 and C2 are in same unit C4 and C5 in same unit
C6 and C7 are in same unit C13 and C14 in same unit
C20 and C21 are in same unit

		PARTS
T1	111208	Loop antenna assembly
T2	111184	S. W. Antenna Coil
T3	110154	B. C. and S. W. Oscillator Coil
T4	108169E	Input I. F. Coil—455 kc.
T5	108106U	Output I.F. Coil—455 kc.
T6	105118	Output Transformer
T7	114216	8" Electro Dynamic Speaker
T8	104225B	60 cycle power transformer
and	104238B	25 cycle power transformer
T9	104228	60 cycle Seeburg Record Changer and Phono Assembly
and	104229	25 cycle Seeburg Record Changer and Phono Assembly
S1	125132	Phono-band switch
S2		Switch on volume control
S3		Switch on record changer
L1	12312	R. F. Choke coil
P1	10794	Pilot light bulb No. T-44



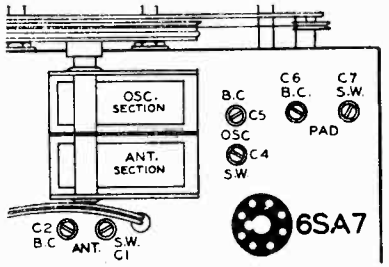


BRC. 671—Series A—Form 6259—4,250—7-40
Pre. 200



TECHNICAL DATA

Power Consumption	Radio Only - - - - - 70 Watts Motor Only - - - - - 20 Watts
Power Output	- - - - - - - - 2.1 Watts Undistorted
Sensitivity for 500 Milliwatt Output:	15 Microvolts Average
Selectivity - 51 KC Broad at 1000 Times Signal at 1000 KC	
Tuning Frequency Range Broadcast Band -	530 to 1600 KC
	Shortwave Band - 5.46 to 18.3 MC
Intermediate Frequency	- - - - - - - - - 455 KC
Speaker	- - - - - - - - - 8 in. Electro Dynamic



TRIMMER VIEW

MANUAL ISSUE A
AUG. 1940
Serial No. 634,400 up

6 TUBE A. C.

2 BAND

BUILT-IN AERIAL

RECORD CHANGER

ALIGNMENT PROCEDURE

- Volume control—Maximum all adjustments.
- Connect radio ground to ground post of signal generator with a short heavy lead.
- Connect dummy antenna value in series with generator output lead.
- Connect output meter across primary of output transformer.
- 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., 200 mmf., 400 ohms.

BAND	SIGNAL GENERATOR Frequency Setting	Dummy Antenna	Connection to Radio	Position of Band Switch	Variable Condenser Setting	Trimmers Adjusted (In Order Shown)	Trimmer Function	Adjustment
I. F.	455 Kc.	.1 MFD	Grid of 6SA7 Mixer	Broadcast	Rotor full open (Plates out of mesh)	Trimmers on top (See Top View)	Input and Output I. F.	Adjust to maximum output
SHORT WAVE BAND (See Note A)	17 Mc.	400 Ohms	External Antenna and Ground	Short Wave	Set Dial at 17 Mc.	Trimmer C4	Short Wave oscillator	Adjust to maximum output
	17 Mc.	400 Ohms	External Antenna and Ground	Short Wave	Set Dial at 17 Mc.	Trimmer C1	Short Wave antenna	Adjust to maximum output
	6 Mc.	400 Ohms	External Antenna and Ground	Short Wave	Set Dial at 6 Mc.	Trimmer C7	Short Wave oscillator series pad	Adjust to maximum rock dial. (See note "C")
BROAD-CAST BAND (See Note A)	1600 Kc.	200 mmf.	Grid of 6SA7	Broadcast	Rotor full open (Plates out of mesh)	Trimmer C5	Broadcast oscillator	Adjust to maximum output
	530 Kc.	200 mmf.	Grid of 6SA7	Broadcast	Rotor full closed	Trimmer C6	Broadcast oscillator series pad	Adjust to maximum output
LOOP ALIGN-MENT (See Note B)	1400 Kc.	200 mmf.	External Antenna and Ground	Broadcast	Set Dial at 1400 Kc.	Trimmer C2 (See Top View)	Broadcast antenna	Adjust to maximum output
	600 Kc.	200 mmf.	External Antenna and Ground	Broadcast	Set Dial at 600 Kc.	Trimmer C6 (See Top View)	Broadcast oscillator series pad	Adjust to maximum output

NOTE "A"—The signal generator is connected to the "ANT." and "GND" leads when aligning the **Short Wave Band** and to the grid of the 6SA7 tube and ground terminal when setting the **Broadcast Band** oscillator end frequencies, (1600 and 530 K. C.).

The loop antenna should be connected to the radio when making these adjustments.

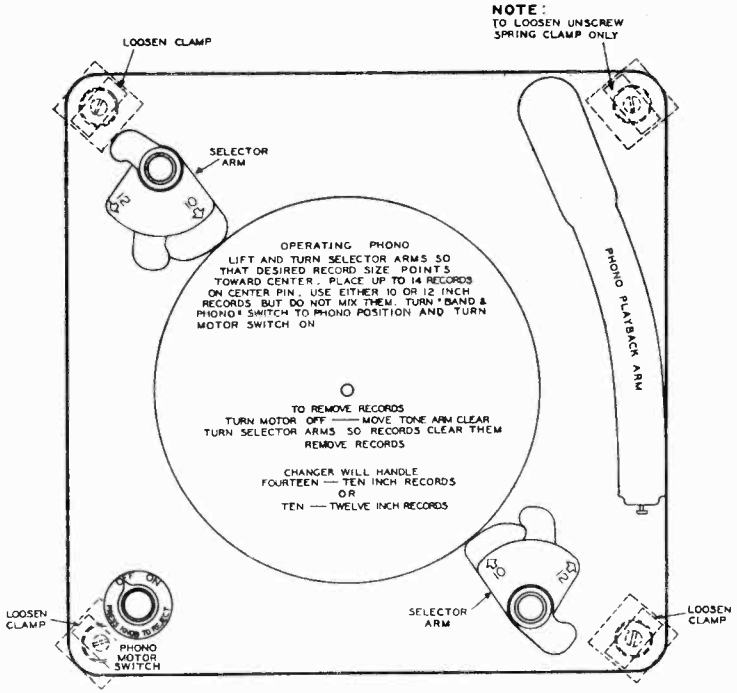
NOTE "B"—Loop alignment is made with the chassis mounted in the cabinet and the loop antenna connected. The signal generator is connected to the "ANT." and "GND." leads.

NOTE "C"—Turn the dial back and forth slightly (rock) and adjust trimmer until the peak of greatest intensity is obtained.

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

After each band is completed, repeat the procedure as a final check.

Automatic Record Changer--Operating Instructions



Setting for Size of Record

The Changer plays up to fourteen 10" or ten 12" records at one loading. **All records must be the same size for each loading.**

On each post you will see selecting arms. The position of these arms determines the setting for different size records. To set for 10 or 12 inch records, it is merely necessary to grasp the posts by the knobs at the top, lift, and turn until the 10" or 12" arrows are pointing toward the center of the turntable. When in either the 10" or 12" position, the posts will snap into place except when they are lifted by hand. Be sure to set both posts for the same size record.

Loading

See that the selecting arms of both posts are turned toward the center of the turntable as indicated by the engraved arrows, and that both sets of arms are set for the same size (10" or 12") records as described in the preceding paragraph.

Place the stack of records (up to fourteen 10" or ten 12") over the center pin so that they will rest on the selecting arms.

Starting the Changer

1. Turn on the radio (allowing approximately 30 seconds for the tubes to warm up) and turn the phonograph-radio knob, to the phonograph position.

2. Turn the switch knob on the Record Changer panel to "ON". The motor will then start and the record changer will go into automatic operation of its own accord.

How to Reject a Record

Merely press the switch knob on the Changer panel. You can do it any time after the needle has come into contact with that record.

Playing Individual Records

Should it be desired to play an individual record merely set up the machine as described above for the proper size (10" or 12" as indicated on the selecting arms), place the record on top of the arms as described under "Loading", and set the machine in operation by means of the switch knob described under "Starting the Changer." In other words, play an individual record in the same manner as you would play a stack of that size.

Unloading

First switch off the motor. Grasp each post by its knob at the top and turn them out of the way.

Lift the played records from the turntable. Then return the posts to the proper playing position as indicated by the arrows on the selecting arms.

The Changer may then be loaded with a new stack of records according to the size shown on the selecting arms.

Turning Off Changer

Throw Changer switch knob to "OFF" position.

Lift tone arm and place it in the rest position. (If you happen to turn off the Changer switch while the mechanism is going through a "change cycle," you will notice that it does not stop until the cycle has been completed, and the tone arm is again in playing position, at which point it is ready to be lifted to the rest position. If you prefer to turn off your Changer with the radio switch, be sure to turn it off while needle is resting upon a record; otherwise, the selecting arms cannot be correctly reset.

To avoid warping of records, never leave records resting on posts.

If Changer is Left Running

No damage will be done if you forget to turn off Changer after it has played its entire load of records. It will simply repeat the last record until stopped or reloaded.

Phonograph Needles

Various types and kinds of needles are available for use in phonograph tone arms. All have their virtues, as well as their faults, for use in ordinary phonographs, where needles can be changed after each record. For playing ten or more records at one set-up, as with this Changer, no attempt should be made to use ordinary steel or fibre points, since continued use of worn points will be likely to ruin both quality of reproduction and the records as well. Any kind of needle can be used which has a point durable enough to play ten records or more without damaging them.

It should be remembered that no matter what the quality of the tone arm, amplifying system and speaker, all of the recorded music must pass through the needle. For this reason, it is absolutely essential that particular care be taken to use good needles, and to see that they are changed often enough so that the records are not damaged and the quality of the music is not impaired.

In general there are two types of needles which can be satisfactorily used on an Automatic Record Changer: those which require changing after approximately 12 records, and the so-called permanent type needles which are rated in terms of "hours of service." In no case should the manufacturers' claims for these needles be exceeded, since in all probability the needles are rated in terms of their maximum life. If at any time short of the rated life, particularly in the case of the semi-permanent type needles, there is any reason to suspect that the needle has become unduly worn, it would probably be advisable to replace it with a new one. **Never under any conditions should a needle be removed from the tone arm head and then replaced—needle manufacturers' claims notwithstanding.**

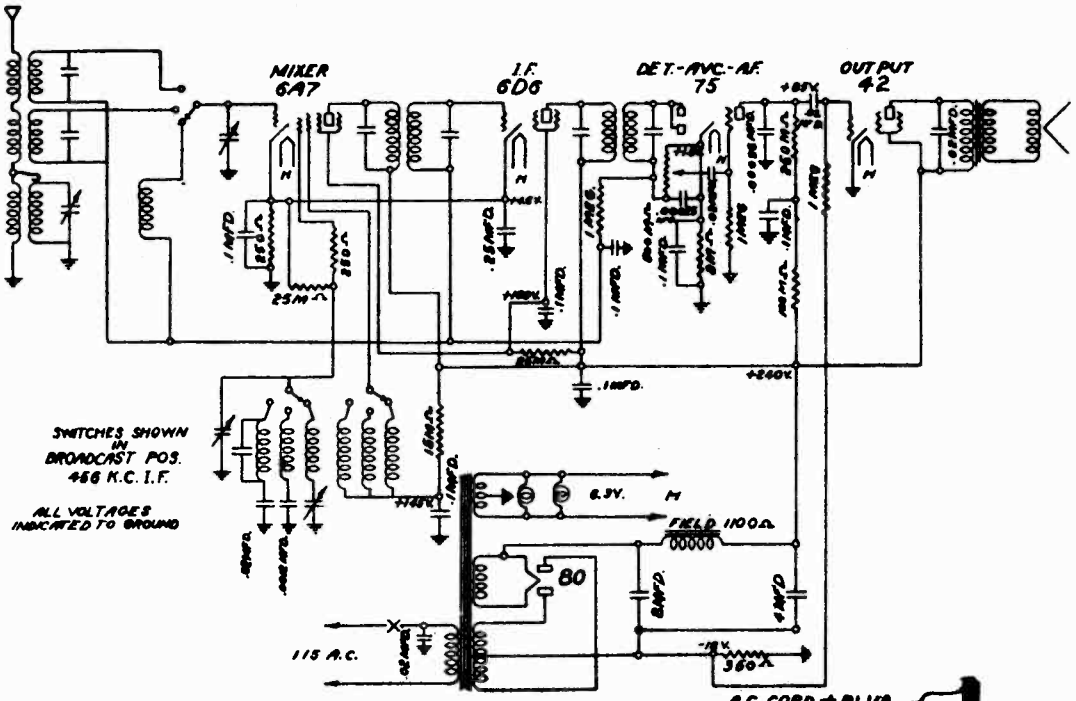
For convenience, the tone arm on your changer may be raised to a nearly vertical position, so that the needle may be easily inserted; the needle screw should be tightened firmly.

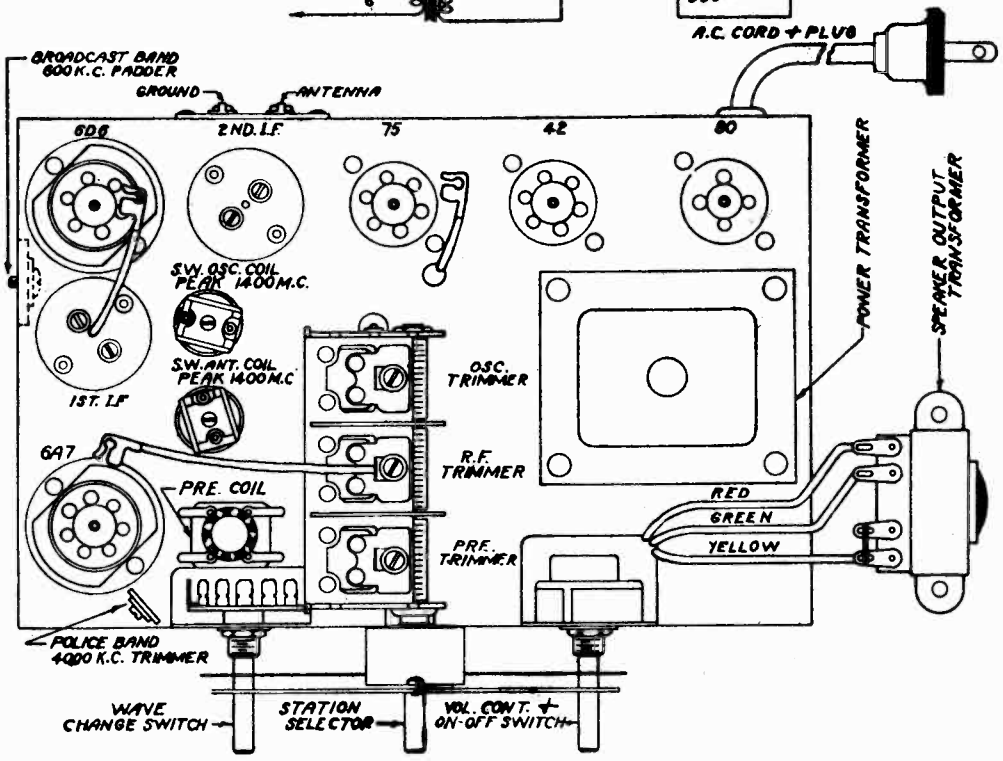
Care of Records

To insure long life for your records requires only slight effort. Do not expose them to heat from the sun, nor to heat from nearby stoves or radiators. Store them preferably in albums, but in any case keep them always in a cool, dry place, resting vertically or horizontally. Remove dust and dirt, using soft cloth and light circular motion. If fluids are used for lubricating record surfaces, keep in mind that these often tend to attract dust, and extra effort is necessary to clean it off. Even a fine film of dust very often contains abrasive particles which, when grounded against the record surface by the steel needle, can cause very rapid wear of the recorded music.

MODEL D-728

WESTERN AUTO SUPPLY CO.





CONVENTIONAL ALIGNMENT - SEE THE SPECIAL SECTION VOL. VIII

FREQUENCY RANGES - BROADCAST - 540 to 1700 KC - Adjust the OSC, RF and ANT trimmers to a maximum peak of 1400 KC, then pad the Oscillator circuit at 600 KC while rocking gang condenser.

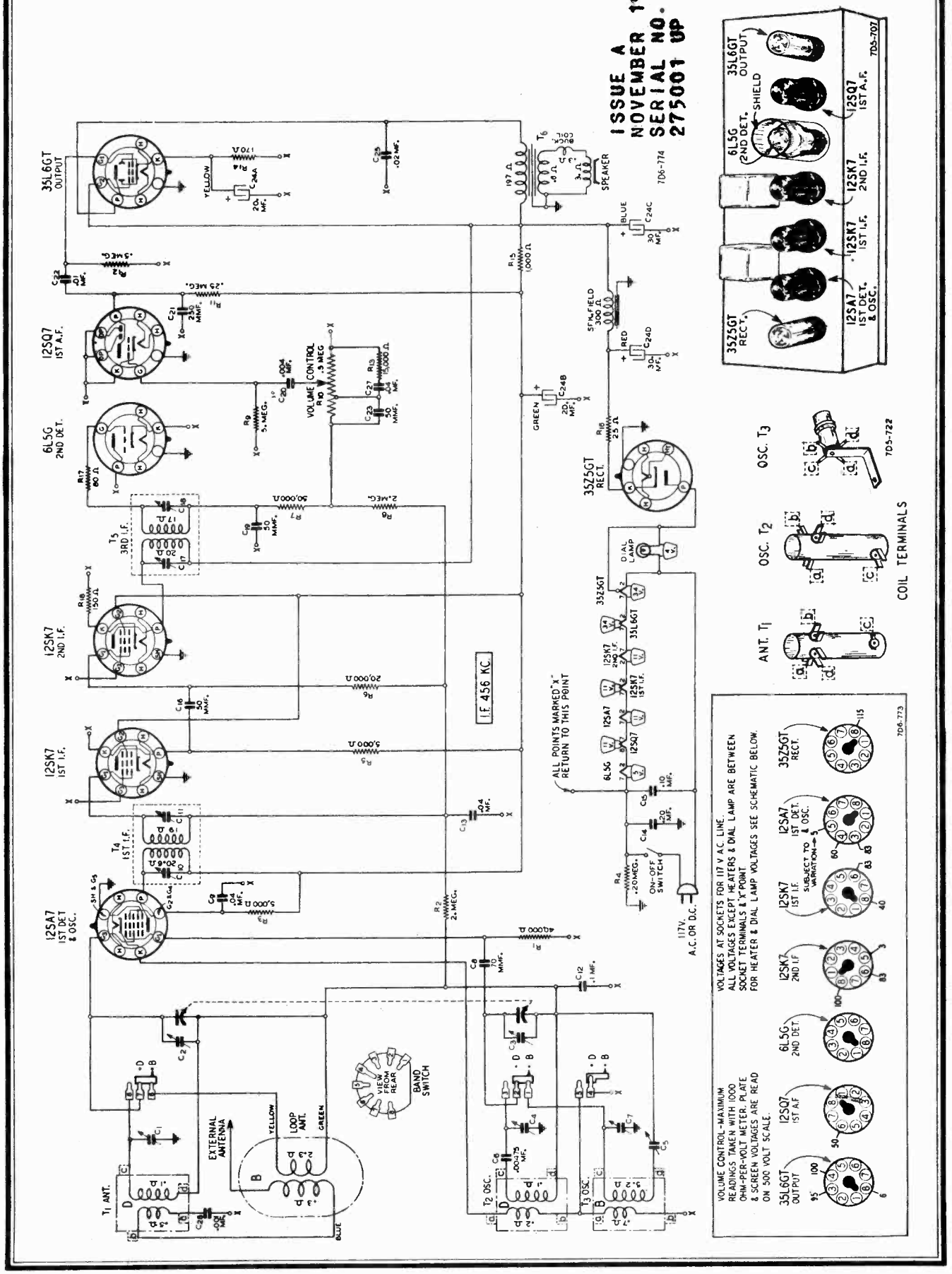
SHORTWAVE - 5800 to 15200 KC - Adjust the OSC and ANT trimmers to a maximum peak of 14000 KC. No padding required.

POLICE - 1700 to 5000 KC - Adjust the ANT coil trimmer to a maximum peak of 4000 KC. No other adjustments required.

WESTERN AUTO SUPPLY CO.

MODEL D-1117

ISSUE A
NOVEMBER 1940
SERIAL NO.
275001 UP



MODEL D-1117

WESTERN AUTO SUPPLY CO.

SPECIFICATIONS

Power Consumption....28 Watts (At 117 volts AC Supply)

Power Output.....75 Watt Undistorted
1.3 Watts Maximum

Selectivity.....49 KC Broad at 1000 times Signal

Intermediate Frequency.....456 KC

Speaker .....5" Electro-Dynamic

Tuning Frequency Range

B Range ..... 528 to 1600 KC
D Range .....5750 to 18,300 KC

Sensitivity (For .05 watt output)—External Antenna

B Range ..... 5 Microvolts Average
D Range .....40 Microvolts Average

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—.1 mf., 200 mmf., and 400 ohm.

SIGNAL GENERATOR						
FREQUENCY SETTING	ANTENNA CONNECTION	GROUND CONNECTION	DUMMY ANTENNA	BAND SWITCH SETTING	CONDENSER SETTING	ADJUST TRIMMERS TO MAXIMUM (See Trimmer Illustration)
I. F.						
456 KC	Signal Grid of 1st Det. Connect at Stator of Large Gang Section.	Point "X" { 12SQ7—1st A.F. Prong No. 3 }	.1 mf.	B Range	Turn Rotor to Full Open	1st I.F. (C10) & (C11) 3rd I.F. (C17) & (C18)
RANGE B						
1600 KC	Signal Grid of 1st Det.	Point "X"	.1 mf.	B Range	Turn Rotor to Full Open	Oscillator Range B (C3) See Note A
1400 KC	External Antenna Lead	Point "X"	200 mmf.	B Range	Turn Rotor to Max. Output Set Indicator to 1400 KC— See Note B	Antenna Range B (C2)
600 KC	External Antenna Lead	Point "X"	200 mmf.	B Range	Turn Rotor to Max. Output	600 KC (C5) Rock Rotor—See Note C
RANGE D						
18,300 KC	External Antenna Lead	Point "X"	400 Ohm	D Range	Turn Rotor to Full Open	Oscillator Range D (C4)
17,000 KC	External Antenna Lead	Point "X"	400 Ohm	D Range	Turn Rotor to Max. Output	Ant. Range D (C1)

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

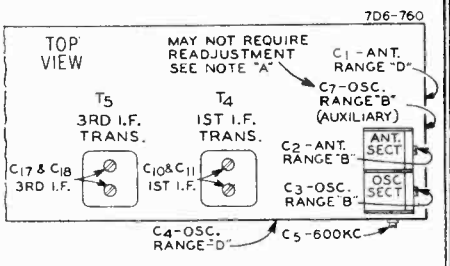
After each range is completed, repeat the procedure as a final check.

NOTE A—Adjust Oscillator Range B (C3) trimmer on gang condenser. Oscillator Range B (C7) auxiliary trimmer on side of chassis is adjusted at factory and ordinarily need not be readjusted in the field.

NOTE B—If the pointer is not at 1400 KC on the dial, set pointer at this mark on the dial scale.

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

CAUTION—When aligning the short wave band, be sure NOT to adjust at the image frequency. This can be checked as follows: Let us say the signal generator is set for 15,000 KC. The signal will then be heard at 15,000 on the dial of the radio. The image signal, which is much weaker, will be heard at 15,000 less 912 KC, or 14,088 KC on the dial. It may be necessary to increase the input signal to hear the image.



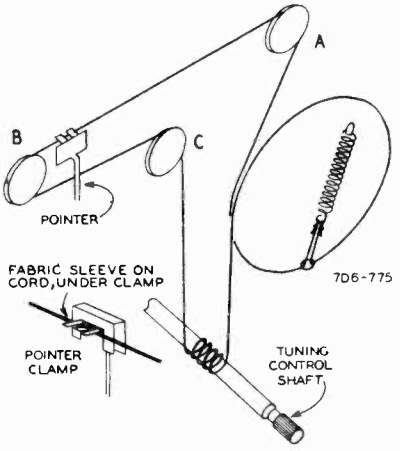
DRIVE CORD REPLACEMENT

Turn gang condenser to completely closed position—see illustration.

Using a new drive cord approximately 50 inches in length, tie one end to tension spring. Pass other end of cord down through hole in groove of drive pulley. Pull spring flush against inside of pulley rim. Wind cord ¼ turn clockwise (from front of chassis) around drive pulley. Then pass over idler pulleys A, B, and C as shown.

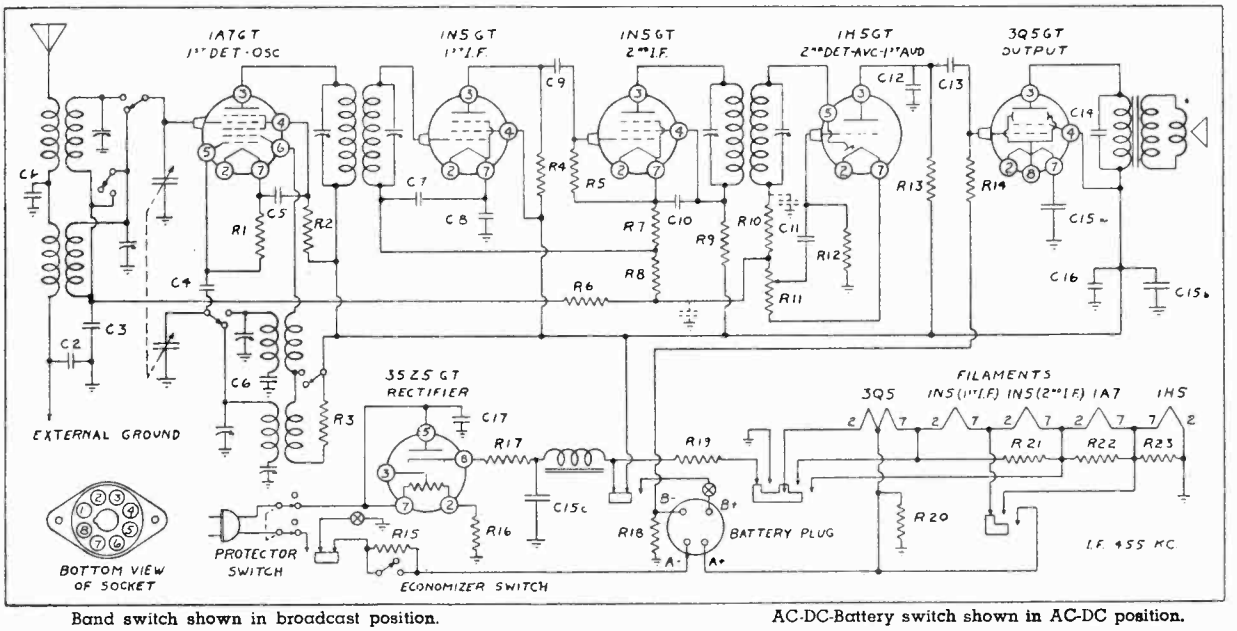
Wind cord 4½ turns counter-clockwise (from front of chassis) around tuning control shaft. These turns should progress away from the chassis. Then wind cord ¾ turn clockwise (from front of chassis) around drive pulley. This turn should be on the left side (from gang condenser side of chassis) of pulley groove. Pass cord through hole in pulley groove. Tie cord tc tension spring. Stretch tension spring and secure free end to hook on pulley.

Dial Pointer Attachment — Tune in a signal of known frequency. Set pointer at this frequency mark on dial scale. Fasten pointer to cord—See illustration.



MODEL D-1123

WESTERN AUTO SUPPLY CO.



Band switch shown in broadcast position.

AC-DC-Battery switch shown in AC-DC position.

RESISTORS

No.	Ohms	Watts	No.	Ohms	Watts
R1	70,000	½	R13	1,000,000	½
R2	30,000	½	R14	2,000,000	½
R3	150	½	R15	0.5	½
R4	20,000	½	R16	550	15
R5	1,000,000	½	R17	30	½
R6	2,000,000	½	R18	400	½
R7	5,000,000	½	R19	1,950	5
R8	5,000,000	½	R20	3,000	½
R9	5,000	½	R21	500	½
R10	70,000	½	R22	200	½
R11	1,000,000	V.C.	R23	110	½
R12	10,000,000	½			

CONDENSERS

No.	Capacity (Mfd.)	Volts	No.	Capacity (Mfd.)	Volts
C1	.0001	Mica	C11	.01	400
C2	.01	400	C12	.0001	Mica
C3	.05	200	C13	.01	400
C4	.0001	Mica	C14	.002	600
C5	.01	400	C15a	40.	25
C6	.004	Mica	C15b	30.	150
C7	.01	400	C15c	30.	150
C8	.25	200	C16	.05	400
C9	.0001	Mica	C17	.05	400
C10	.01	400			

SERVICE INFORMATION

When removing the chassis it is first necessary to remove the "Protector Switch" located on the left side of the cabinet. When checking the chassis on AC or DC it is necessary to insert a piece of metal, similar to the one on the cardboard back, into the "Protector Switch" to close the line circuit.

Speaker (Part No. P-4572) 6" PM Type.

D.C. voice coil resistance.....7.3 ohms
Voice coil impedance at 400 cycles.....8.0 ohms

B.C. and S.W. Antenna Coil (Part No. P4582)

Starting with the lug that is connected to ground lead in a clockwise direction, the terminals are: No. 1, ground; No. 2, cond; No. 3, pad; No. 4, grid; No. 5, grid; No. 6, ant.

S.W. Primary—No. 6 and No. 2—Resistance.....35 ohm
B.C. Primary—No. 1 and No. 2—Resistance.....24.1 ohms
S.W. Secondary—No. 3 and No. 4—Resistance.....07 ohm
B.C. Secondary—No. 3 and No. 5—Resistance.....2.9 ohms

B.C. and S.W. Oscillator Coil (Part No. P-4566)

In a clockwise direction starting at the mounting lug on same side as single lug on other end, the connections are: No. 1, plate; No. 2, grid; No. 3, S.W. pad; No. 4, B.C. pad; No. 5, grid, No. 6, switch; other end, No. 7, B+.

S.W. Primary—No. 1 and No. 6—Resistance.....8 ohm
B.C. Primary—No. 7 and No. 6—Resistance.....3.8 ohms
S.W. Secondary—No. 2 and No. 3—Resistance.....05 ohm
B.C. Secondary—No. 5 and No. 4—Resistance.....4.5 ohms

First I.F. Transformer (Part No. P-4569)
Primary—Blue white, plate; red white B+—Resistance 12.1 ohms.
Secondary—White, grid; black white, AVC—Resistance 24.9 ohms.

Second I.F. Transformer (Part No. P-4420)
Primary—Blue white, plate; red white B+—Resistance 15.1 ohms.
Secondary—White, grid; black white, AVC—Resistance 11.8 ohms.

VOLTAGE CHART

All voltages measured with a 1,000 ohm per volt meter on the 150 volt scale (except AC readings). Line voltage 117 volts AC. Volume control maximum and no signal tuned in.

	Volts
1A7GT TUBE	
Plate (3) to ground	98
Screen (4) to ground	60
Grid (6) to ground	99
1N5GT (1st I.F.) TUBE	
Plate (3) to ground	76
Screen (4) to ground	100
1N5GT (2nd I.F.) TUBE	
Plate (3) to ground	91
Screen (4) to ground	93
3Q5GT TUBE	
Plate (3) to ground	97
Screen (4) to ground	100
35Z5GT TUBE	
Plate (5) to ground	117 (AC)
Cathode (8) to ground	120

MODEL D-1123

WESTERN AUTO SUPPLY CO.

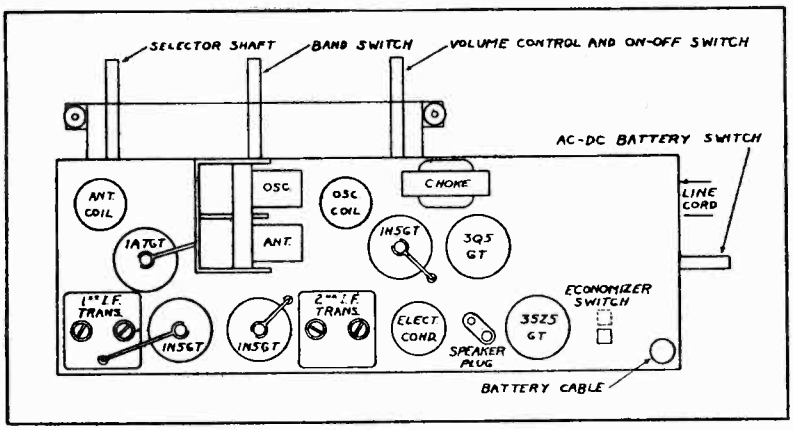


Fig. 1—Top View

TUBE COMPLEMENT

The tube complement of this receiver consists of the following tubes:

1—Type 1A7GT—Pentagrid Converter (Composite first detector and oscillator).

1—Type 1N5GT—Sharp cut-off Pentode as 1st IF Amplifier (455 KC).

1—Type 1N5GT—Sharp cut-off Pentode as 2nd IF Amplifier (455 KC).

1—Type 1H5GT—Duplex Diode Triode Second Detector, AVC and First Audio.

1—Type 3Q5GT—Beam Power Amplifier.

1—Type 35Z5—Rectifier.

SERVICE NOTES

Voltages taken from the different points of the circuit to 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. These voltages are clearly indicated on the voltage chart.

In order to prevent the signal from acting upon the AVC and affecting accuracy of voltage measurements, aerial and ground leads should be short circuited while making measurements.

All voltages should be measured with 117 volts AC input to receiver. Resistance and actual connections of coils and transformers and speaker data are given under Service Information.

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

Failure to operate, noisy or weak reception is usually due to defective tubes, the tubes making poor contact with sockets or grid clips making poor contact with the caps of the tubes. Tubes may be checked very easily by replacing with other tubes which are known to be good.

ALIGNING INSTRUCTIONS

All of the adjustments have been very carefully set with signal generators at the factory and require no further adjustment, unless it becomes necessary to replace a coil or transformer, or if the adjustments have been tampered with in the field. Under no circumstances attempt any adjustments without first making certain that adjustment is necessary and only after voltages, tubes and condensers have been checked and found to be normal. To properly re-align this receiver, a signal generator as well as an output meter, must be used.

ALIGNMENT PROCEDURE

- Volume control—Maximum all adjustments.
- Connect radio chassis to ground post of signal generator with a short heavy lead.
- Connect dummy antenna value in series with generator output lead.
- Connect output meter across primary of output transformer.
- 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 mfd., 200 mmfd., 400 ohms.

BAND	SIGNAL GENERATOR Frequency Setting	Dummy Antenna	Connection to Radio	Variable Condenser Setting	Trimmers Adjusted (In Order Shown)	Trimmer Function	Adjustment
I. F.	455 KC.	.1 Mfd.	Grid of 1N5GT I.F. tube	Rotor full open (Plates out of mesh)	Two trimmers on top (See Fig. 1)	Output I. F.	Adjust to maximum output
	455 KC.	.1 Mfd.	Grid of 1A7GT tube	Rotor full open (Plates out of mesh)	Two trimmers on top (See Fig. 1)	Input I. F.	Adjust to maximum output
SHORT WAVE	18,100 KC.	400 ohms	Antenna lead	Rotor full open (Plates out of mesh)	Trimmer—Upper left, front of chassis	Short Wave Oscillator	Adjust to receive signal
	16,100 KC.	400 ohms	Antenna lead	Tune Signal	Trimmer—Center, front of chassis	Short Wave Antenna	Adjust to maximum output
BROAD-CAST	1730 KC.	200 Mmf.	Antenna lead	Rotor full open (Plates out of mesh)	Trimmer—Lower left, front of chassis	Broadcast Oscillator	Adjust to maximum output
	1400 KC.	200 Mmf.	Antenna lead	Set dial at 1400 KC.	Trimmer—Right, front of chassis	Broadcast Antenna	Adjust to maximum output
	600 KC.	200 Mmf.	Antenna lead	Set dial at 600 KC.	Trimmer—Top of chassis (See Fig. 1)	Oscillator Series Pad	Adjust to maximum rock dial See Note 'A'

Note "A"—Turn the dial back and forth slightly (rock) and adjust trimmer until the peak of intensity is obtained.

Attenuate the signal from the signal generator to prevent the leveling-off action of the A.V.C.

Do not bend variable condenser to correct tracking.

Frequency Range—535 to 1730 and 5,750 to 18,100 K.C.

Power output .27 watt undistorted—.35 watt maximum.

Intermediate Frequency 455 K.C.

MODEL D-1190

WESTERN AUTO SUPPLY CO.

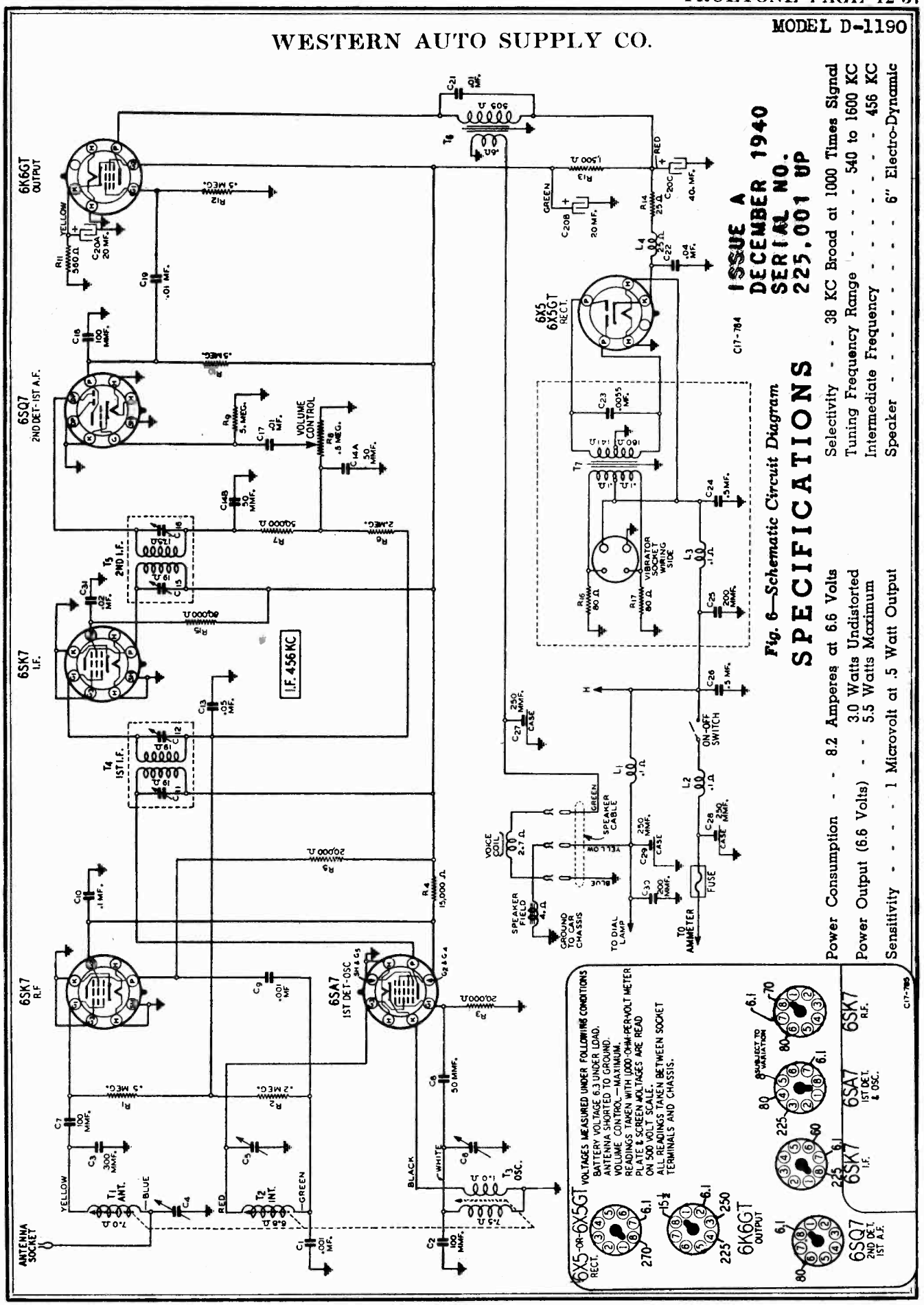


Fig. 6—Schematic Circuit Diagram

C17-784

ISSUE A
DECEMBER 1940
SERIAL NO.
225,001 UP

SPECIFICATIONS

Power Consumption - - 8.2 Amperes at 6.6 Volts

Power Output (6.6 Volts) - - 3.0 Watts Undistorted
5.5 Watts Maximum

Sensitivity - - - - 1 Microvolt at .5 Watt Output

Selectivity - - 38 KC Broad at 1000 Times Signal

Tuning Frequency Range - - - - - 540 to 1600 KC

Intermediate Frequency - - - - - - - - 456 KC

Speaker - - - - - - - - - 6" Electro-Dynamic

MODEL D-1190

WESTERN AUTO SUPPLY CO.

Adjusting Antenna Trimmer

After the antenna is connected, tune in a weak signal at approximately 1400 KC with the volume control about three-fourths on. Turn the adjusting screw of the antenna trimmer (C4) up or down until maximum output is obtained. See Fig. 3 for location of this trimmer.

Calibrating the Radio

To calibrate the radio, tune in a station of known frequency. Remove the dial lamp assembly from the back of the control unit. The calibration screw is at the bottom of the dial lamp tube. Insert a fine bladed screwdriver and turn this screw until the pointer is at the frequency of the station being received.

A short insulated screwdriver will be helpful.

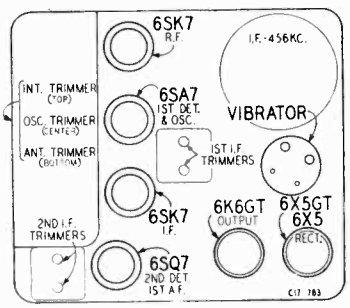


Fig. 4—Location of Tubes and Vibrator

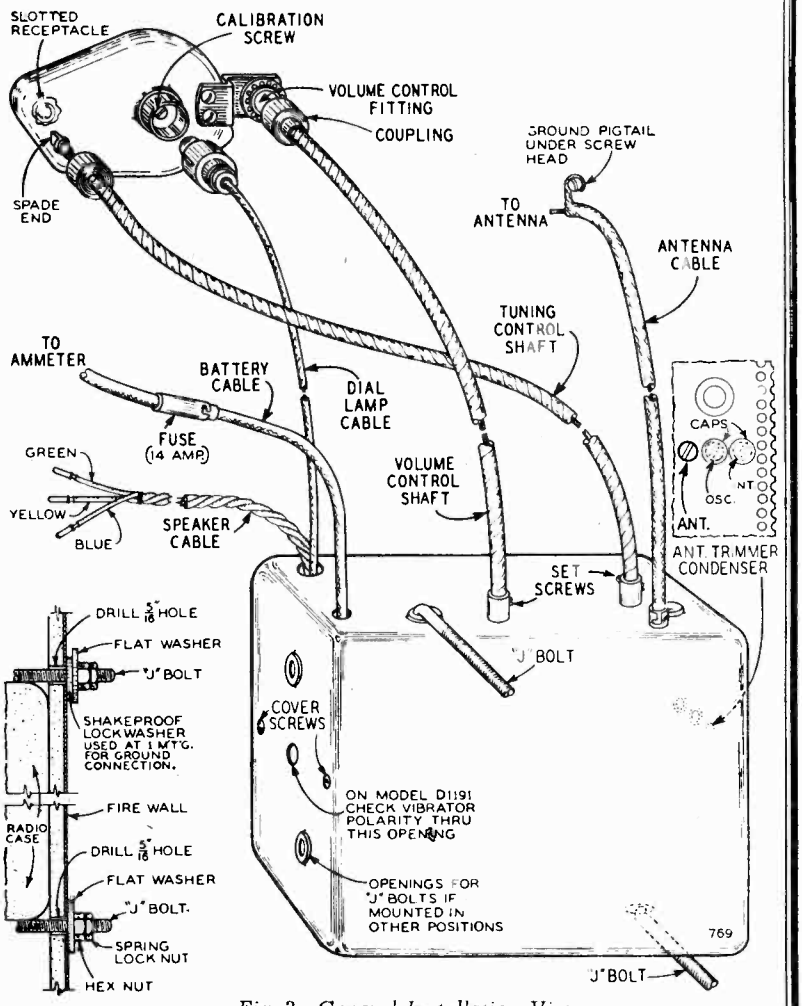


Fig. 3—General Installation View

ALIGNMENT PROCEDURE

Volume Control—Maximum All Adjustments.

Connect Radio Chassis to Ground Post of Signal Generator with a Short Heavy Lead.

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

The following equipment is required for aligning:

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

Output Indicating Meter—Non-Metallic Screwdriver.

Dummy Antenna—.05 mf., See Note A

SIGNAL GENERATOR FREQUENCY SETTING	SIGNAL GENERATOR CONNECTION AT RADIO	DUMMY ANTENNA	IRON CORE SETTING	ADJUST TRIMMERS TO MAXIMUM (See Figs. 3 and 4)
I.F.	Control Grid (prong No. 8)		Extreme Position	1st I.F. (C11) & (C12)
456 KC	6SA7 1st Det. Tube	.05 mf.	out of Coil	2nd I.F. (C15) & (C16)
OSCILLATOR	Antenna Cable		Extreme Position	
1600 KC	See Note A	See Note A	out of Coil	Oscillator (C6)
1400 KC ADJUSTMENT				
1400 KC	Antenna Cable	See Note A	Tune to Max. Output with Tuning Knob	Int. (C5) Ant. (C4)

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

Car Antenna Readjustment—Tune in weak signal near 1400 KC—Readjust Antenna Trimmer C4 for maximum output.

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

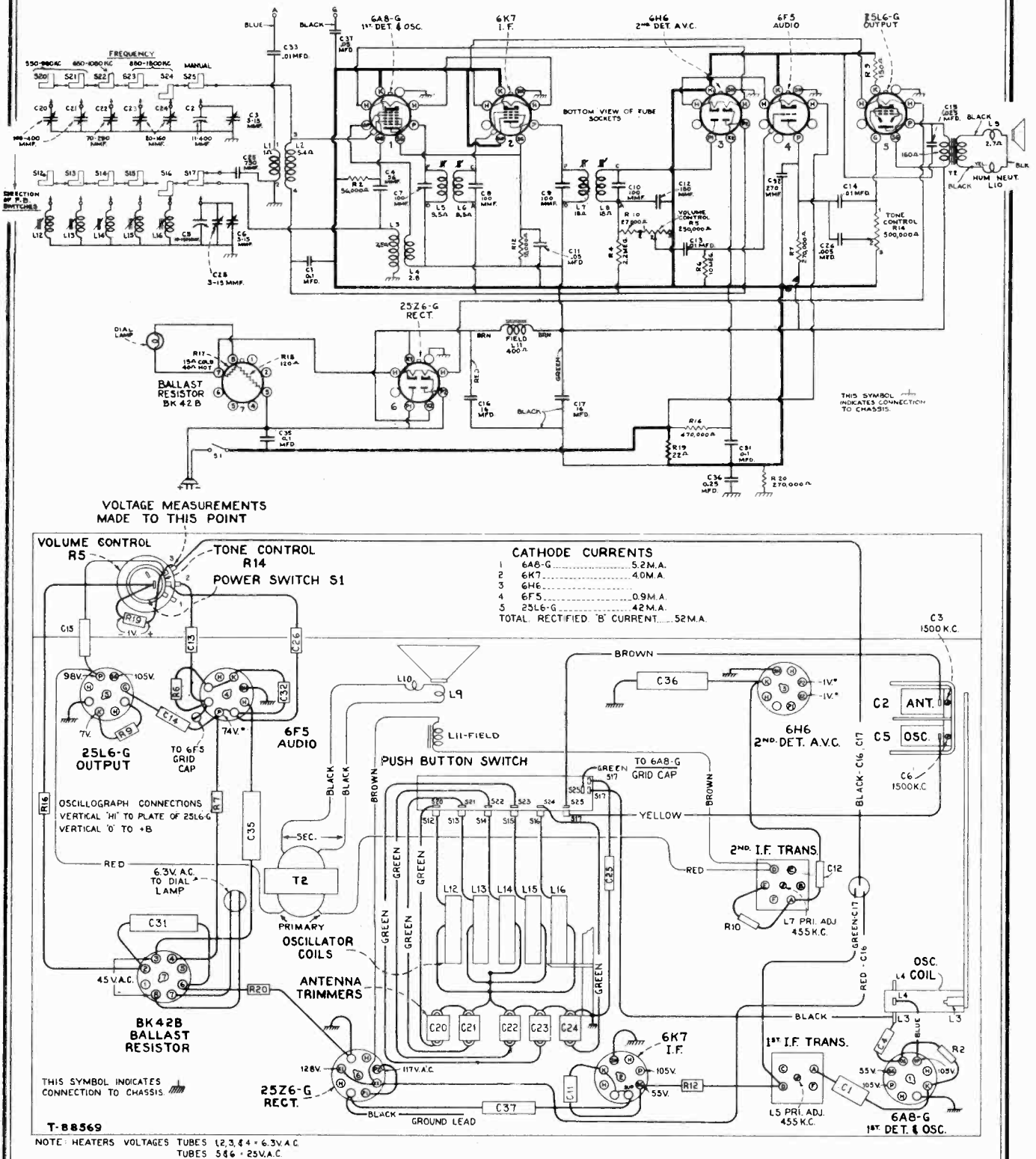
After each range is completed, repeat the procedure as a final check.

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

CALIBRATION—To calibrate the radio, tune in a station of known frequency. At the back of the control unit is the calibration screw. Remove the dial lamp assembly. Insert a fine bladed screwdriver and turn this screw until the pointer on the dial scale is at the frequency of the station being received.

WESTINGHOUSE ELEC. SUPPLY CO. INC.

MODEL WR-158



Bottom View of Chassis Showing Socket Voltages, Parts Location, and R-F Wiring

*** NOTE:** Values with star (*) are operating voltages in circuits with high series-resistance. These voltages will be lower when measured with a voltmeter drawing current through the circuit. Exact voltage may be measured with a vacuum-tube voltmeter if desired. The other values will not be affected by measuring with an ordinary high-resistance voltmeter.

Measurements made to chassis unless otherwise indicated, with set tuned to quiet point and volume control at minimum. Values should hold within approximately ±20% with 117-volt a-c supply.

MODEL WR-158

WESTINGHOUSE ELEC. SUPPLY CO. INC.

ALIGNMENT PROCEDURE

Cathode-Ray Alignment is the preferable method. Connections for the oscillograph are shown in the chassis drawing. Turn the receiver volume control to maximum.

Output Meter Alignment.—If this method is used, connect the meter across the voice coil, and turn the receiver volume control to maximum.

Test-Oscillator.—For all alignment operations, connect the low side of the test-oscillator to the black lead and keep the output as low as possible to avoid a-v-c action.

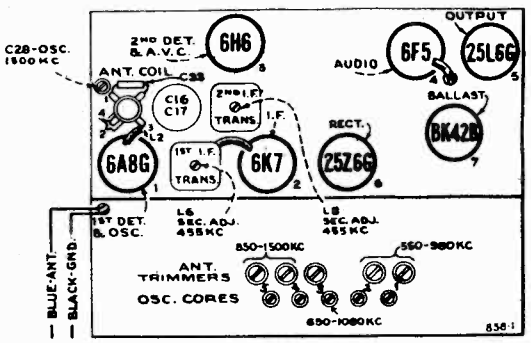
Calibration Marks. — The tuning dial is fastened in the cabinet and cannot be used for reference during alignment. Therefore calibration marks corresponding to dial readings of 600 kc and 1,500 kc have been stamped in the plate on the front of the chassis, as shown in the accompanying drawing. These marks are used for reference during alignment.

Drum and Dial Indicator Adjustment.—As the first step in r-f alignment, check the position of the drum on the front shaft of the gang condenser. With the gang at maximum (full mesh) the drum set-screw should be pointing directly down as shown in the drawing. With the drum in this position, and the gang at maximum, move the dial indicator along the drive cord to coincide with the left-hand line as shown. The indicator is held to the drive cord by means of spring clips.

After completion of alignment, and after the chassis has been fastened in the cabinet, turn the gang to maximum and note whether the dial indicator is at the left-hand end mark on the dial; if it is not, loosen the drum set-screw (which is accessible through a slot in the bottom of the cabinet), turn the drum slightly so that the indicator is at this mark, and then tighten the set-screw.

After completion of alignment, seal the i-f core-adjustment screws with household cement.

The dial tuning (right hand) push-button must be pushed in for steps 1 to 3, inclusive.

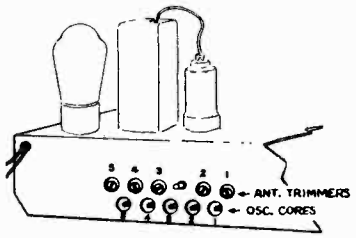


Tube and Trimmer Locations

Steps	Connect the high side of test-osc. to—	Tune test-osc. to—	Turn radio dial to—	Adjust the following for max. peak output
1	6K7 I-F grid cap, in series with .01 mfd.	455 kc	Quiet point between 550-750 kc	L7 and L8 (2nd I-F Trans.)
2	6A8-G grid cap, in series with .01 mfd.	455 kc		L5 and L6 (1st I-F Trans.)
3	Antenna lead (blue) in series with 200 mmf.	1,500 kc	1,500 kc calibration mark	C6 (osc.)* C3 (ant.)
4	Follow "Adjustments for Electric Tuning"			

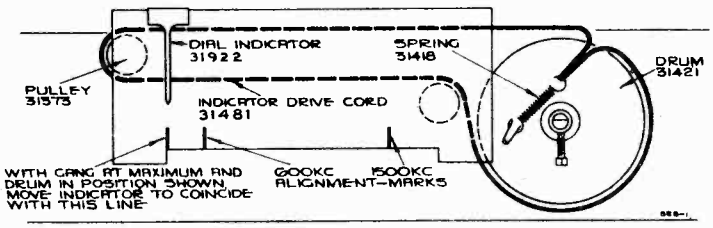
* Use minimum capacity peak if two peaks can be obtained.

The oscillator section of the gang condenser has two trimmers, one on top, accessible through a hole in the chassis, and the other on bottom. It may be necessary to adjust both of these trimmers to secure a peak on 1,500 kc.



Push-Button Adjustments

Nos. 1, 2—Approximately 550-980 kc.
No. 3—Approximately 650-1,080 kc.
Nos. 4, 5—Approximately 850-1,500 kc.



DRUM SHOWN WITH GANG AT MAXIMUM CAPACITY

Dial-Indicator and Drive Mechanism

Refer to "Alignment Procedure" for explanation of the "calibration marks" shown in this drawing

Adjustments for Electric Tuning

These models have six push-buttons. The right-hand button connects the gang condenser for dial tuning. The other five buttons are for electric tuning of five different stations in the standard-broadcast range. The station buttons connect to separate magnetically-tuned oscillator coils and separate antenna trimmers which must be adjusted for the desired stations. Use an insulated screwdriver or alignment tool. Allow at least five minutes warm-up period before making adjustments. Use a regular antenna for the preliminary adjustments.

The procedure is as follows:

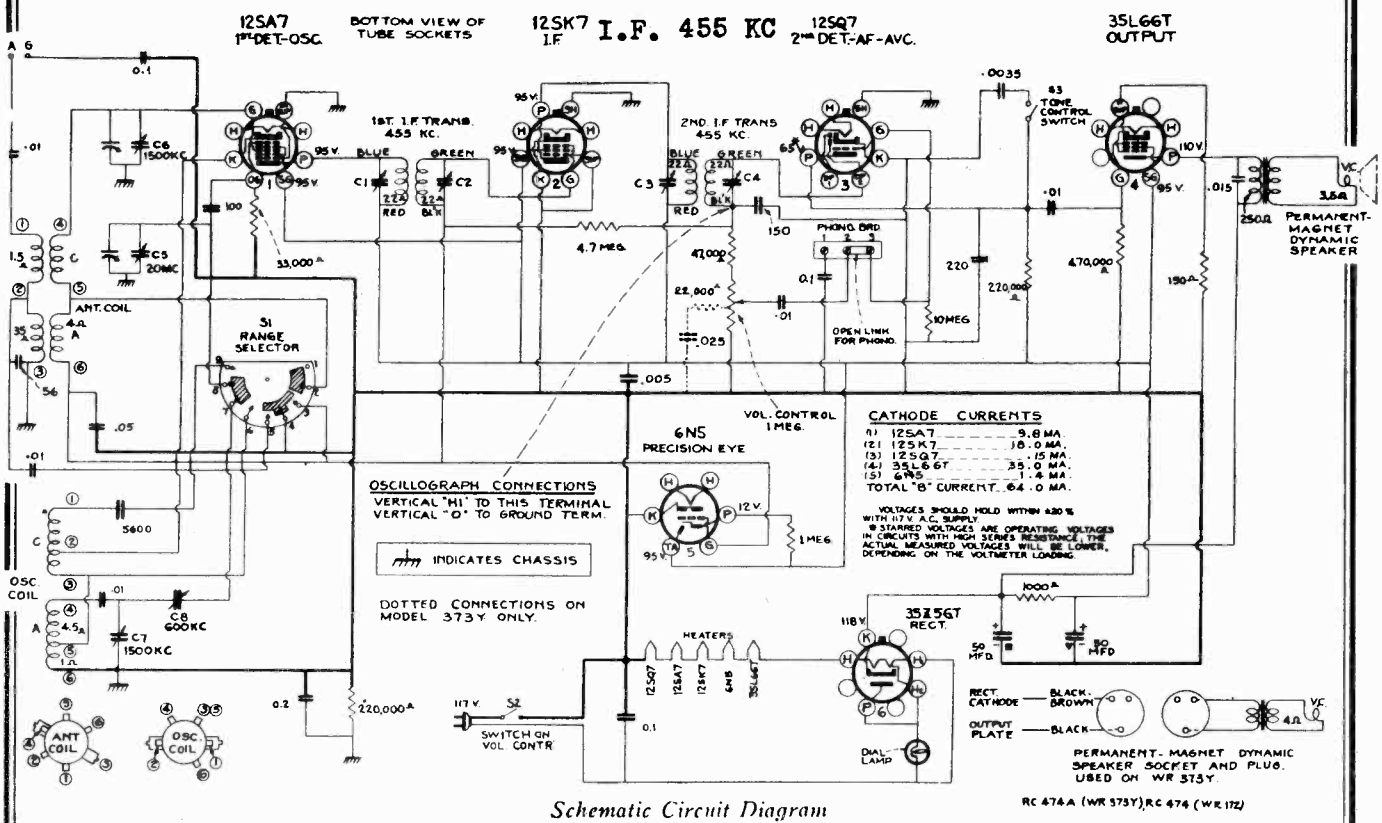
1. Make a list of the five desired stations, arranged in order from low to high frequencies.
2. Push in the dial-tuning (right-hand) button, and manually tune in the first station on the list.
3. Push in station-button No. 1 (left-hand) and adjust No. 1 oscillator core (L12) to receive this station. Screw the core all the way in, to lowest frequency, and then unscrew slowly until the station it received.
4. Adjust No. 1 antenna trimmer (C20) for maximum output on this station.
5. Adjust for each of the remaining four stations in the same manner.

(Clockwise adjustment of oscillator cores and antenna trimmers tunes the circuits to lower frequencies.)

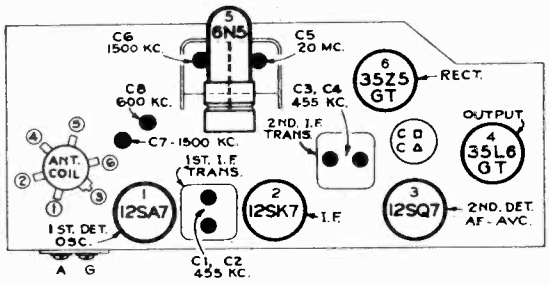
6. Make a final careful adjustment of the oscillator cores and antenna trimmers, using one or two feet of wire as an antenna to ensure sharp peaking.

WESTINGHOUSE ELEC. SUPPLY CO. INC.

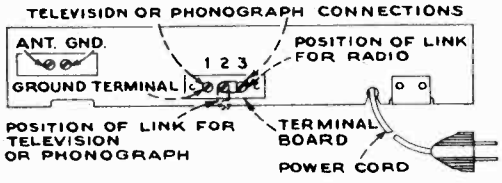
MODELS WR-172, WR-373Y



Schematic Circuit Diagram



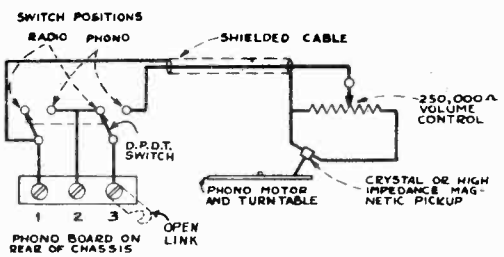
Tube and Trimmer Locations



Back of Chassis

Phonograph Terminal Board.—A 3-terminal board is located on the rear of the chassis for connecting a phonograph pickup, or Record Player, into the audio amplifier of the receiver. The accompanying schematic shows connections for a high-impedance pickup with a switch for changing from radio to records. For low-impedance pickups, a suitable step-up transformer should be used to provide proper impedance matching, and should be connected between the pickup and radio-phono switch.

Record Player Connections, Using a Double-Pole, Double-Throw Toggle Switch



FOR FURTHER DATA SEE INDEX

WR-172 is a table model with a six inch speaker; WR-373Y is a console model with a twelve inch speaker. Both models have six tubes, are AC-DC operated, have six push buttons for tuning, a horizontal Slide Rule dial, and a Precision Eye for precise manual tuning.

POWER OUTPUT (125 volts, 60 cycle supply)

Undistorted	0.8 watts
Maximum	1.4 watts

POWER SUPPLY RATINGS

A-C Rating	105-125 volts, 50-60 cycles, 35 watts
D-C Rating	105-125 volts, direct current, 35 watts

LOUDSPEAKER

Type	Permanent Magnet Dynamic	
	Model WR-172	**Model WR-373Y**
Diameter	6-inch	12-inch
Voice Coil Impedance at 400 cycles	3.5 ohms	4 ohms

MODELS WR-172, WR-272, WR-372, WR-373, WR-373Y, WR-473, WR-474
MODELS WR-175, WR-176
MODELS WR-272, WR-372

WESTINGHOUSE ELEC. SUPPLY CO. INC.

MODELS WR-172, WR-272, WR-372, WR-373, WR-373Y, WR-473, WR-474

Alignment Procedure

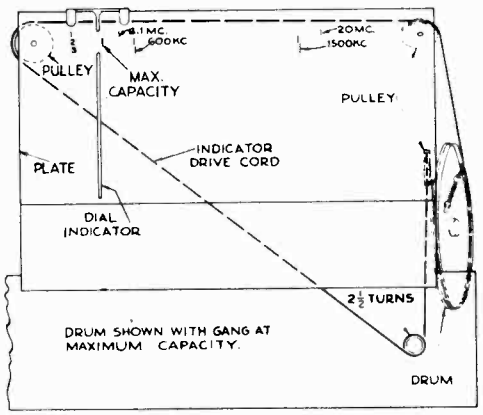
Cathode-Ray Alignment is the preferable method. Connections for the oscillograph are shown in the schematic drawing.

Output Meter Alignment.—If this method is used, connect the meter across the voice coil, and turn the receiver volume control to maximum.

Test-Oscillator.—For all alignment operations, connect the low side of the test-oscillator to the receiver ground binding post, and keep the output as low as possible to avoid A.V.C. action.

Calibration Marks.—The tuning dial is fastened in the cabinet and can not be used for reference during alignment. Therefore calibration marks corresponding to dial readings of 600 kc, 1,500 kc, 6.1 mc, and 20 mc have been stamped in the plate on the front of the chassis as shown in the accompanying drawing. These marks are used for reference during alignment.

Dial Indicator Adjustment.—With the gang condenser in full mesh, the indicator should point 1/16 inch to the left of the mark at the extreme left (low frequency) end of the dial scale.



Dial-Indicator and Drive Mechanism
Refer to "Alignment Procedure" for explanation of the "calibration marks" shown in this drawing

Steps	Connect the high side of the test osc. to—	Tune test osc. to—	Turn radio dial to—	Adjust the following for maximum peak output
1	Antenna terminal	455 kc	"A" Band Quiet point between 550-750 kc	C3 and C4 (2nd I-F trans.)
2				C1 and C2 (1st I-F trans.)
3	Antenna terminal in series with 300 ohms	20 mc	"C" Band 20 mc calibration mark	C5 (osc.)*
4	Antenna terminal in series with 200 mmf.	1,500 kc	"A" Band 1,500 kc calibration mark	C7 (osc.) C6 (ant.)
5		600 kc	"A" Band 600 kc calibration mark	C8 (osc.) Rock gang
6	Repeat step 4			

* Use **minimum** peak if two can be obtained. Check to determine that C5 has been adjusted properly by tuning receiver to approximately 19.09 mc where a weaker signal should be received.

Note: Oscillator tracks above signal on both bands.

Alignment Procedure

WR-175 and WR-176

Output Meter Alignment.—Connect the meter across the voice coil and turn the receiver volume control to maximum.

Test-Oscillator.—Connect the low side of the test-oscillator to the receiver chassis, through a .01 mfd capacitor, and keep the output as low as possible.

Steps	Connect the high side of test-oscillator to—	Tune test-osc. to—	Turn radio dial to—	Adjust the following for max. peak output—
1	Tuning condenser stator (osc.) in series with .01 mfd.	455 kc	Quiet point at 1,600 kc end of dial	C1, C2, C3, C4 (1st and 2nd I-F transformers)
2	Antenna term. of ant. loop in series with 100 mmfd.	1,600 kc	Full clockwise (out of mesh)	C5 (oscillator)
3		1,500 kc	Resonance on 1,500 kc signal	C6 (antenna)

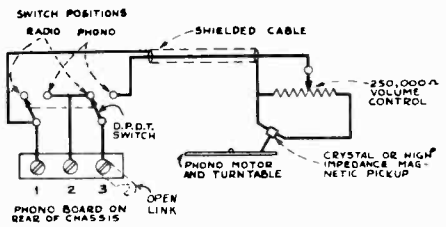
RECORD PLAYER CONNECTIONS, WR-272, WR-372

Phonograph or Television Attachment.—A terminal board is provided on the rear of the chassis for connecting a record player or television attachment into the audio-amplifying circuit.

On Models WR-272 and WR-372 the cable from the attachment should be connected to terminals 1 and 3. The shielded or ground lead going to terminal 1. When using the attachment the connection link is disconnected and volume is controlled by the control on the phonograph or television attachment.

The accompanying schematic shows connections for a high-impedance pickup with switch for changing from radio to records. For low-impedance pickups, a suitable step-up transformer should be used to provide proper impedance matching, and should be connected between the pickup and radio-phono switch.

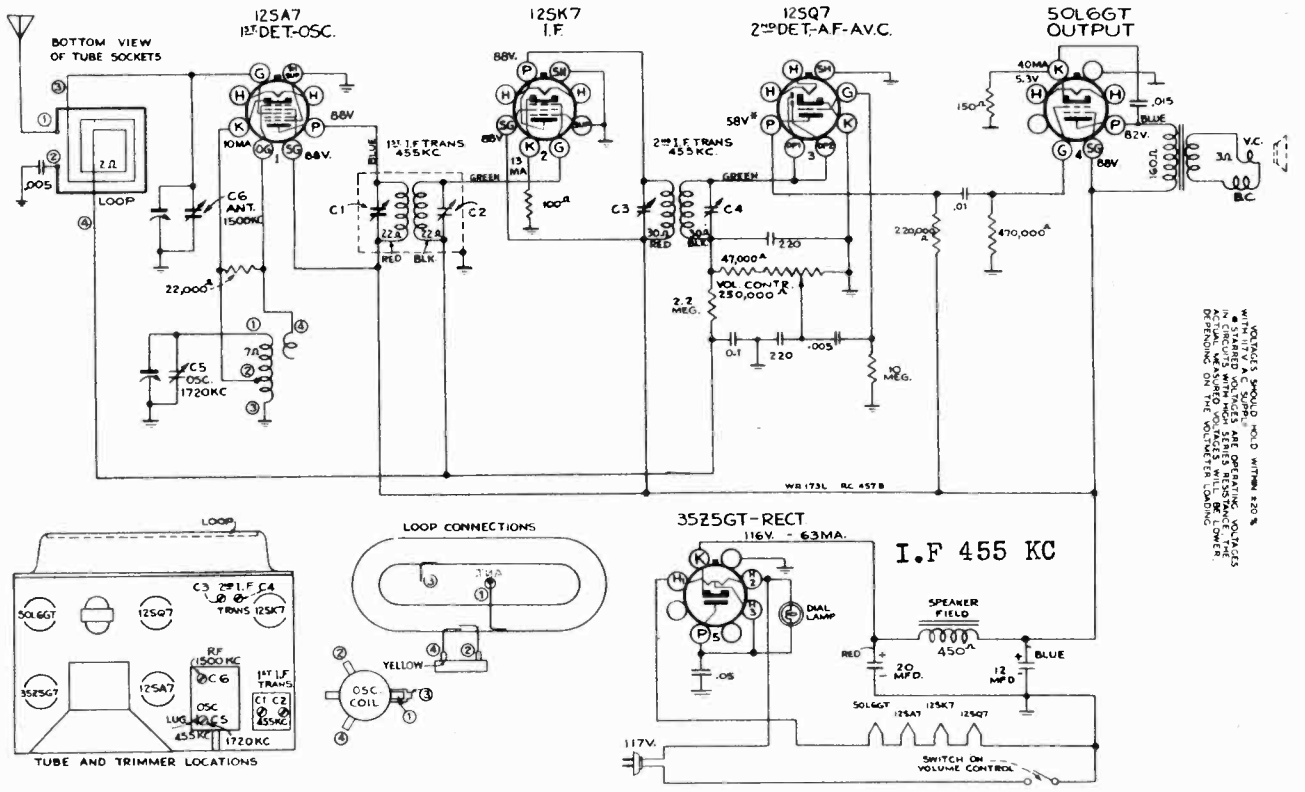
The Model WR-373 has the Radio-Phono-Television switch built into the chassis, allowing switching to be accomplished thru the "Tone-Radio-Phono-Television" Control on the front of cabinet.



Record Player Connections, Using a Double-Pole Double-Throw Toggle Switch Models WR-272 and WR-372

WESTINGHOUSE ELEC. SUPPLY CO. INC.

MODEL WR-173L
MODEL WR-174L

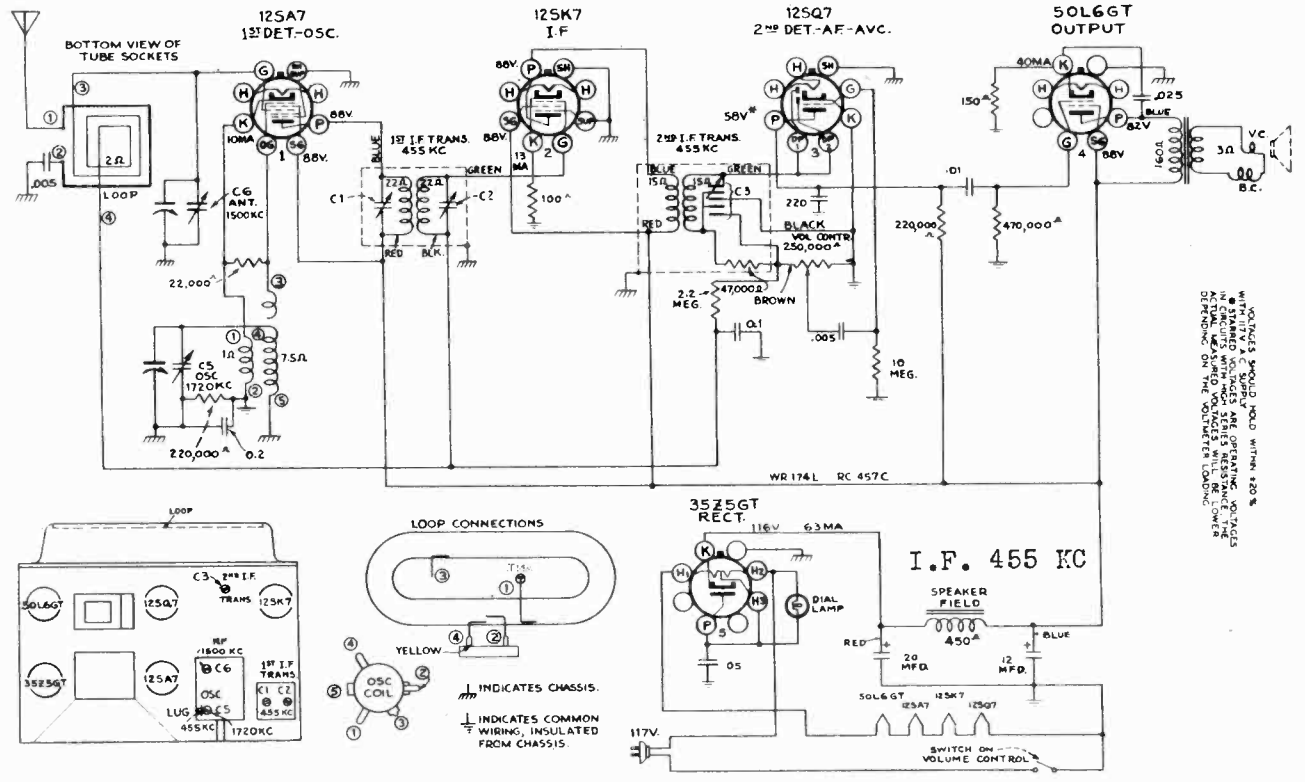


Schematic Circuit Diagram Model WR-173L

Precautionary Lead Dress

1. Dress 1st I-F plate and grid leads against chassis and away from each other. Dress plate lead from 12SK7 close to chassis.
2. Dress electrolytic capacitor against rear apron.

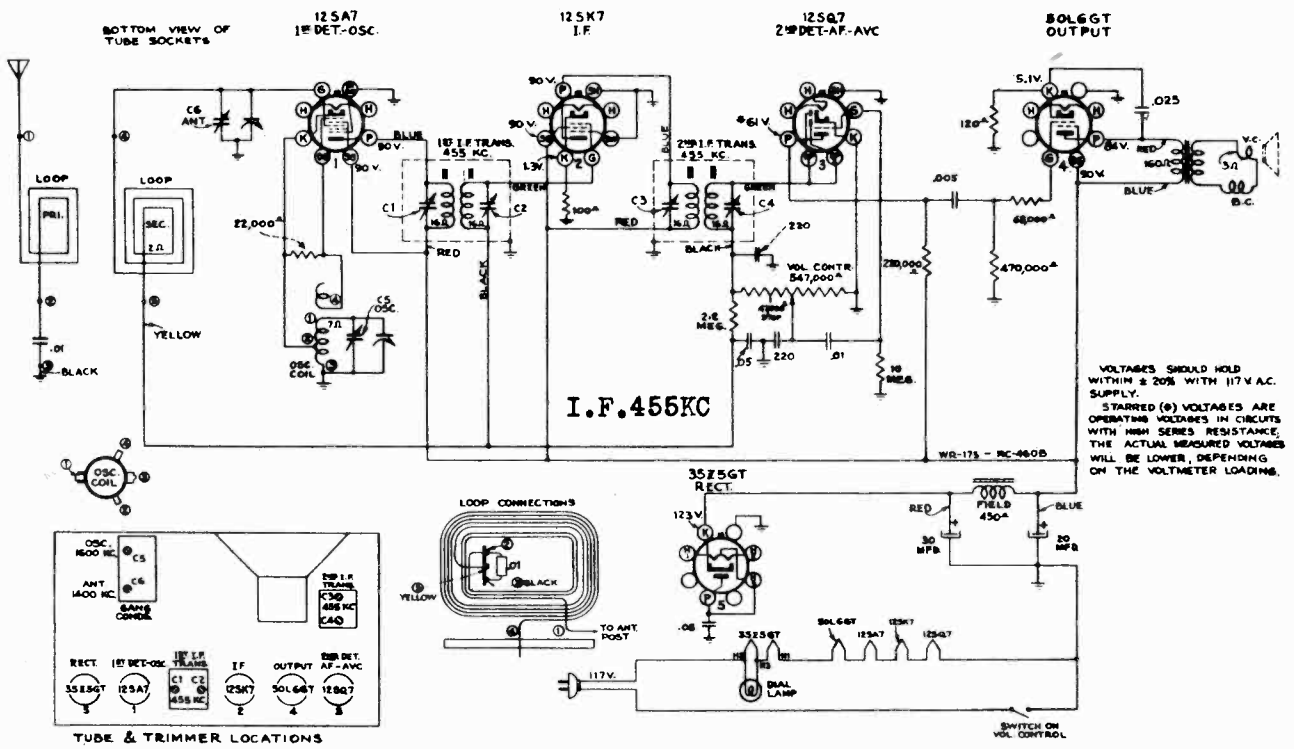
TRIM OSC 1720 KC
TRIM ANT 1500 KC



Schematic Circuit Diagram Model WR-174L

MODEL WR-175
MODEL WR-176

WESTINGHOUSE ELEC. SUPPLY CO. INC.



Schematic Circuit Diagram Model WR-175

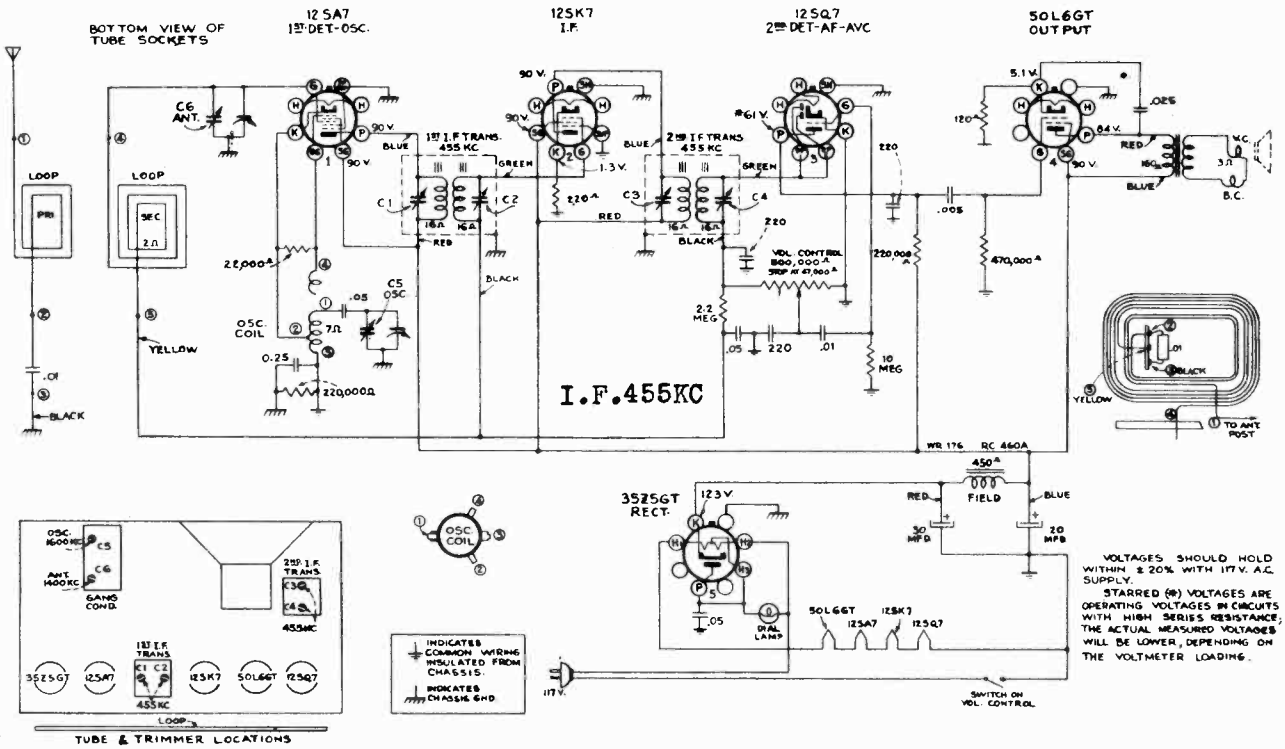
Precautionary Lead Dress

1. Dress 1st I-F plate and grid leads against chassis and away from each other. Dress plate lead from 12SK7 close to chassis.
2. Dress leads from terminal board on loop support away from loop.

Power Supply Ratings

105-125 volts, 50-60 cycles, 30 watts
105-125 volts, direct current, 30 watts

FOR OTHER DATA SEE INDEX

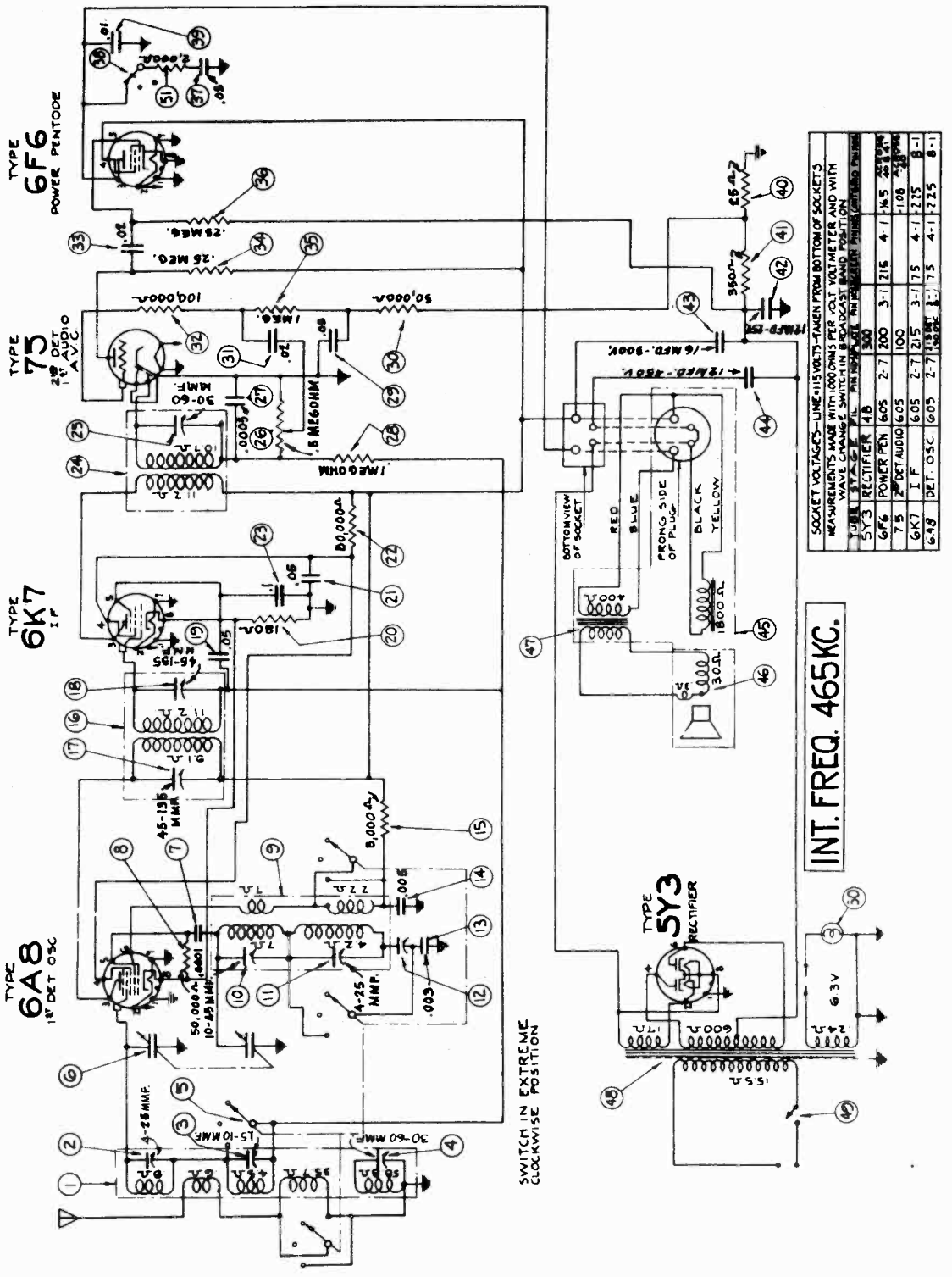


Schematic Circuit Diagram Model WR-176

WESTINGHOUSE ELEC. SUPPLY CO. INC.

MODELS WR-210, WR-310

WESTINGHOUSE RADIO MODELS WR-210 AND WR-310



MODELS WR-210, WR-310

WESTINGHOUSE ELEC. SUPPLY CO. INC.

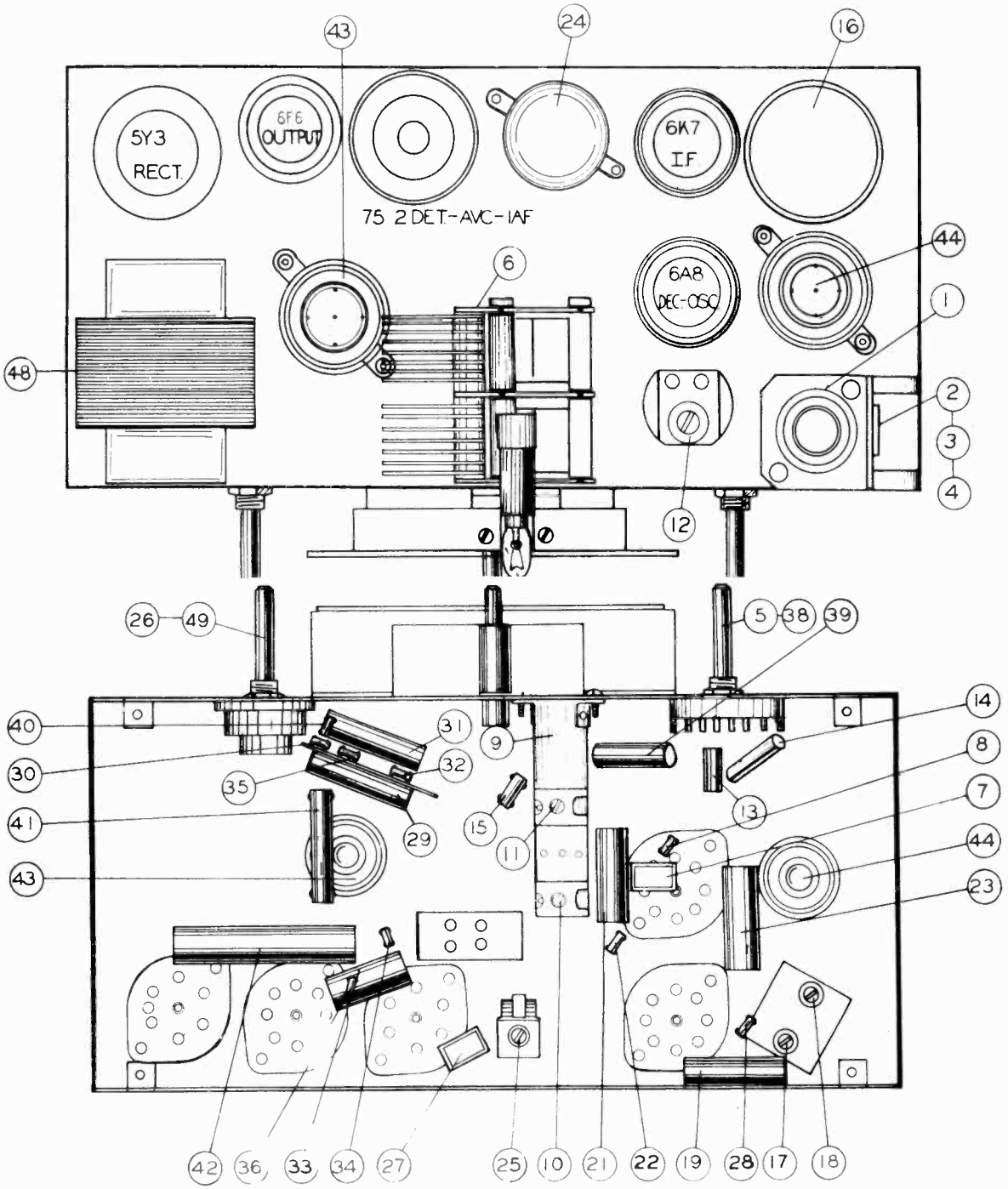


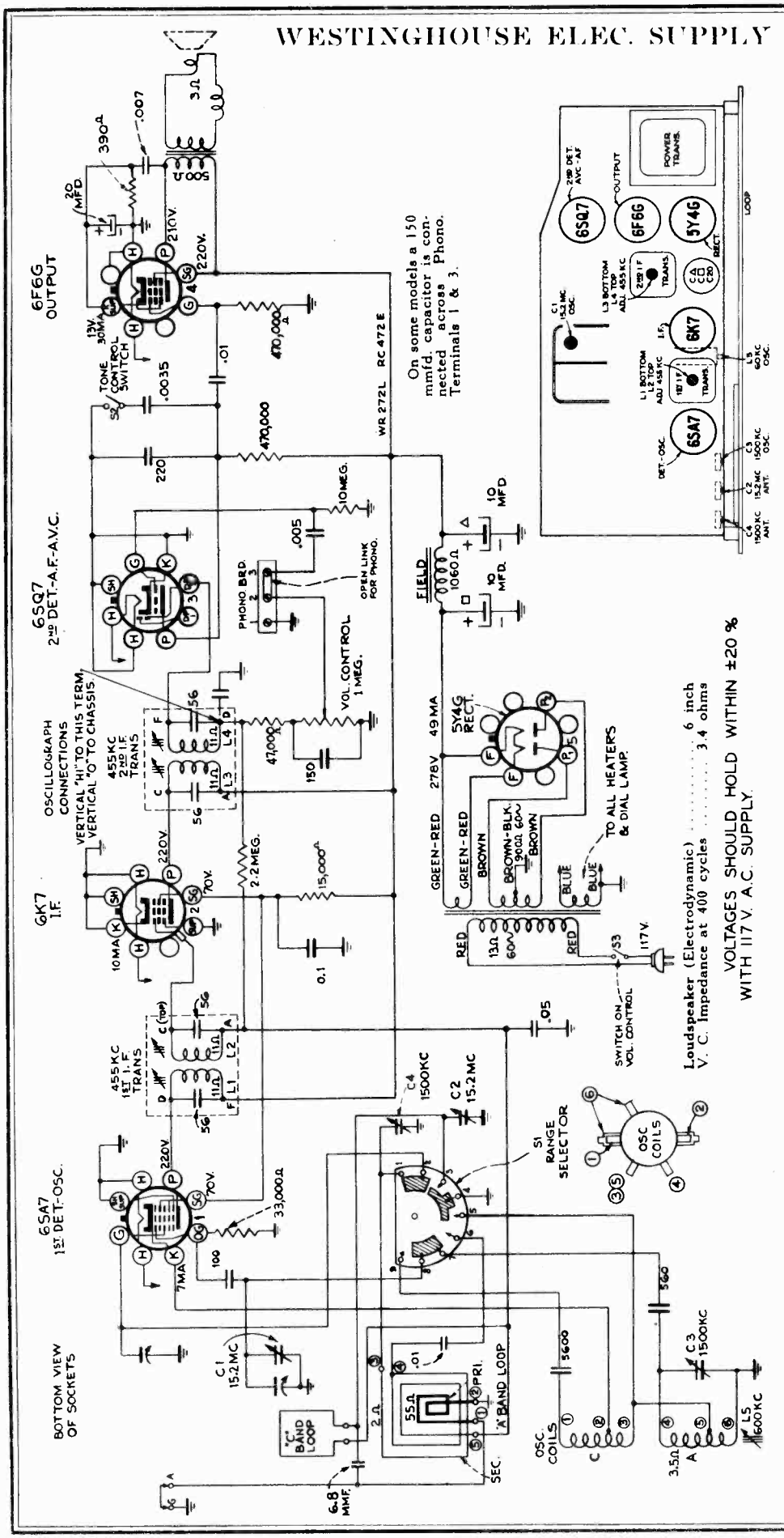
Figure No. 2

I-F ALIGNMENT: Volume control, maximum. Tone control treble. Wave switch, broadcast. Dial set 600 kc. Apply 465 kc to grid of 6K7 i-f tube. Adjust trimmer 25 for maximum output. Apply 465 kc to grid of 6A8 and adjust trimmers 17 and 18 for maximum output.

BROADCAST BAND ALIGNMENT: Apply 465 kc to antenna lead; adjust wavetrap trimmer 4 for minimum output. Apply 1700 kc through .0002 mf dummy; adjust trimmer 11 until signal is received. Adjust trimmer 3 (middle). Set dial and generator to 600 kc; adjust trimmer 12.

S-W BAND ALIGNMENT: Wave switch to s-w position. Set dial and generator to 6000 kc; adjust trimmer 10 until signal is received. Adjust trimmer 2 (top) for maximum output.

WESTINGHOUSE ELEC. SUPPLY CO. INC. MODEL WR-272L



Frequency Range

Standard Broadcast (A) ..... 540-1,560 kc
Short Wave (C) ..... 5.8-18 mc

Intermediate Frequency ..... 455 kc

Power Supply Rating

Rating A ..... 105-125 volts, 50-60 cycles, 60 watts
Rating B ..... 105-125 volts, 25-60 cycles, 60 watts

Adjustments for Push-Button Tuning

The push-buttons should be adjusted for six favorite stations after the receiver has been operating for a brief warm-up period. Each button may be set up to any standard broadcast station. The preferable arrangement is to adjust for stations in the order of frequency, from low to high. Proceed as follows:

1. Loosen the push buttons by turning counter-clockwise about one turn from their tight position so they turn freely.

2. Check to be sure the link connection on back of chassis is in "Radio" position (connected between terminals 2 and 3).

3. Press in push-button No. 1 (left) as far as it will go without undue pressure, hold in, retune station with manual control if necessary for best reception, and then carefully tighten up the button. Do not tighten more than ¼ turn after the screw begins to grip or damage to the mechanism may result.

4. Proceed in a similar manner for the remainder of the push-buttons.

5. Insert the station marker tabs in the recesses above the push-buttons.

MODEL 272L

WESTINGHOUSE ELEC. SUPPLY CO. INC.

Alignment Procedure

Before proceeding with alignment the following lead dress should be carefully checked.

1. Dress loop lead (3) away from tap lead (4) and chassis.

2. Dress AC power leads away from sockets.

3. Dress leads from band switch to trimmers away from each other and away from chassis.

4. Dress blue lead and two green leads from terminal board away from chassis and away from each other.

5. Dress green lead from volume control to rear terminal away from all parts and against chassis.

Cathode-Ray Alignment is the preferable method. Connections for the oscillograph are shown in the schematic drawing.

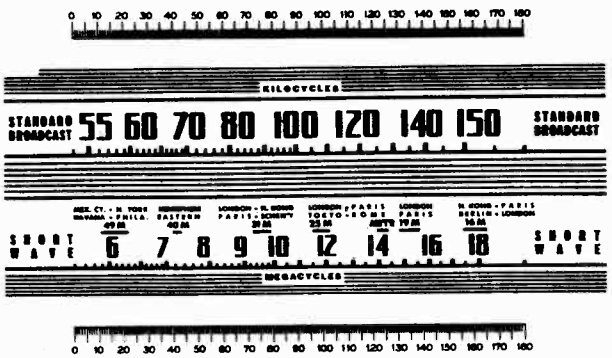
Output Meter Alignment.—If this method is used, connect the meter across the voice coil, and turn the receiver volume control to maximum.

Test-Oscillator.—For all alignment operations, connect the low side of the test-oscillator to the receiver chassis, and keep the output as low as possible to avoid a-v-c action.

Calibration Scale on Indicator-Drive-Cord Drum.—The tuning dial is fastened in the cabinet and cannot be used for reference during alignment; therefore, a calibration scale is attached to the tuning drum. The setting of the gang condenser is read on this scale, which is calibrated in degrees. The correct setting of the gang in degrees, for each alignment frequency, is given in the alignment table.

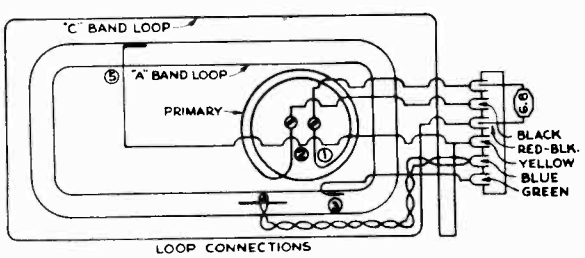
Pointer for Calibration Scale.—Improvise a pointer for the calibration scale by fastening a piece of wire to the chassis, and bend the wire so that it points to the 0° mark on the calibration scale when the plates are fully meshed.

Dial-Indicator Adjustment.—After fastening the chassis in the cabinet, attach the dial indicator to the drive cable with indicator 1/16 inch to the left of the mark at the extreme left (540 kc) end of the dial scale, with gang condenser fully meshed. The indicator has a spring clip for attachment to the cable.



Receiver Dial Scales, and Corresponding 0-180° Calibration Scales

The corresponding position of the dial indicator for any setting of the calibration scale can be determined by drawing a line from this point on the bottom calibration scale to the same point on the top calibration scale. For example, 24° on the calibration scale corresponds to 600 kc on "A" band. Read instructions under "Alignment Procedure."

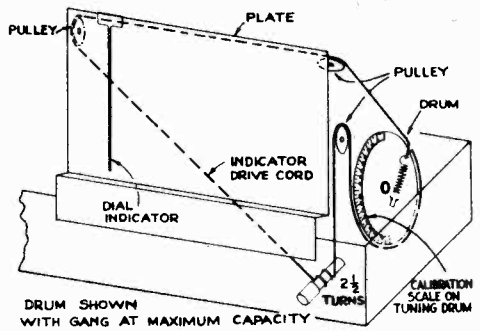


LOOP CONNECTIONS

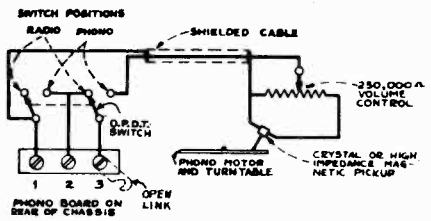
Steps	Connect test-osc. output to—	Tune test-osc. to—	Turn radio dial to—	Adjust the following for max. peak output—
1	I-F grid through 0.1 mfd. capacitor and ground	455 kc	Quiet point between 550-750 kc	L-3 and L-4 (2nd I-F trans.)
2	1st det. grid through 0.1 mfd. capacitor and ground	455 kc		L-1 and L-2 (1st I-F trans.)
3	Antenna terminal (open link between "A" and "G") in series with 300 ohms	15.2 mc	15.2 mc (134°) "C" band	C-1 oscillator*
4		15.2 mc	Rock at 15.2 mc (134°)	C-2 antenna† while rocking
5	Antenna terminal ("A" and "G") in series with 200 mmfd.	1,500 kc	1,500 kc (156°) "A" band	C-3 oscillator C-4 antenna
6		600 kc	Rock at 600 kc (24°) "A" band	L-5 oscillator while rocking
7		1,500 kc	1,500 kc (156°) "A" band	C-3 oscillator C-4 antenna

* Oscillator should track on high frequency side of signal. If two peaks are obtained use high frequency (minimum capacity) peak.

† If two peaks can be obtained use low frequency (maximum capacity) peak.



Dial-Indicator and Drive Mechanism



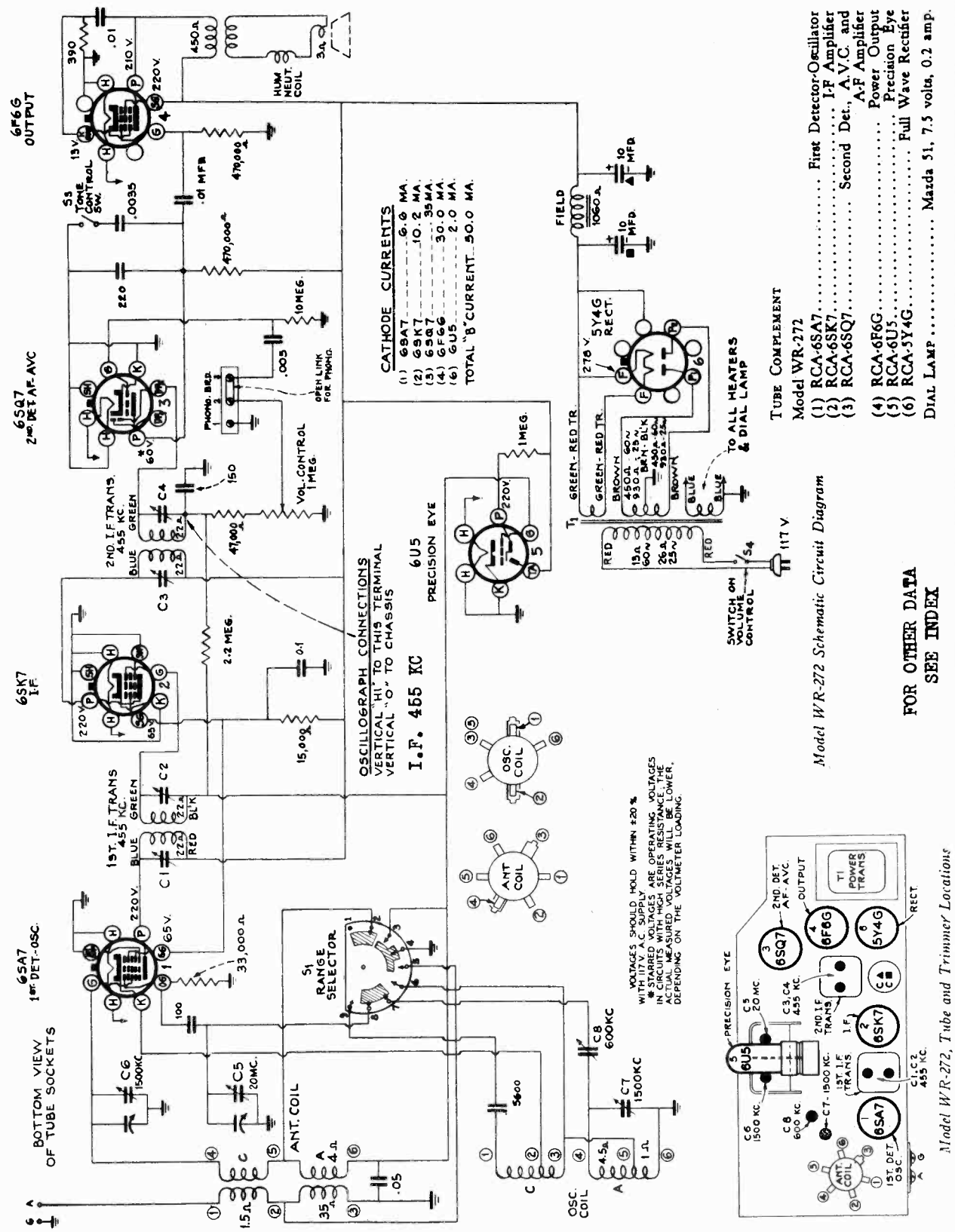
Record Player Connections, Using a Double-Pole Double-Throw Toggle Switch

The accompanying schematic shows connections for a high-impedance pickup with switch for changing from radio to records. For low-impedance pickups, a suitable step-up transformer should be used to provide proper impedance matching, and should be connected between the pickup and radio-phono switch.

Loudspeaker.—To center the loudspeaker voice coil, first remove the front dust cover, then loosen the screws, holding the spider assembly. Insert three narrow feelers into the air gap, and tighten the spider screws. Remove the feelers and fasten a dust cover in place with loudspeaker cement.

WESTINGHOUSE ELEC. SUPPLY CO. INC.

MODEL WR-272



Model WR-272 Schematic Circuit Diagram

TUBE COMPLEMENT
Model WR-272

(1) RCA-6SA7 ..... First Detector-Oscillator
(2) RCA-6SK7 ..... I-F Amplifier
(3) RCA-6SQ7 ..... Second Det., A.V.C. and A-F Amplifier
(4) RCA-6F6G ..... Power Output
(5) RCA-6U5 ..... Precision Eye
(6) RCA-5Y4G ..... Full Wave Rectifier

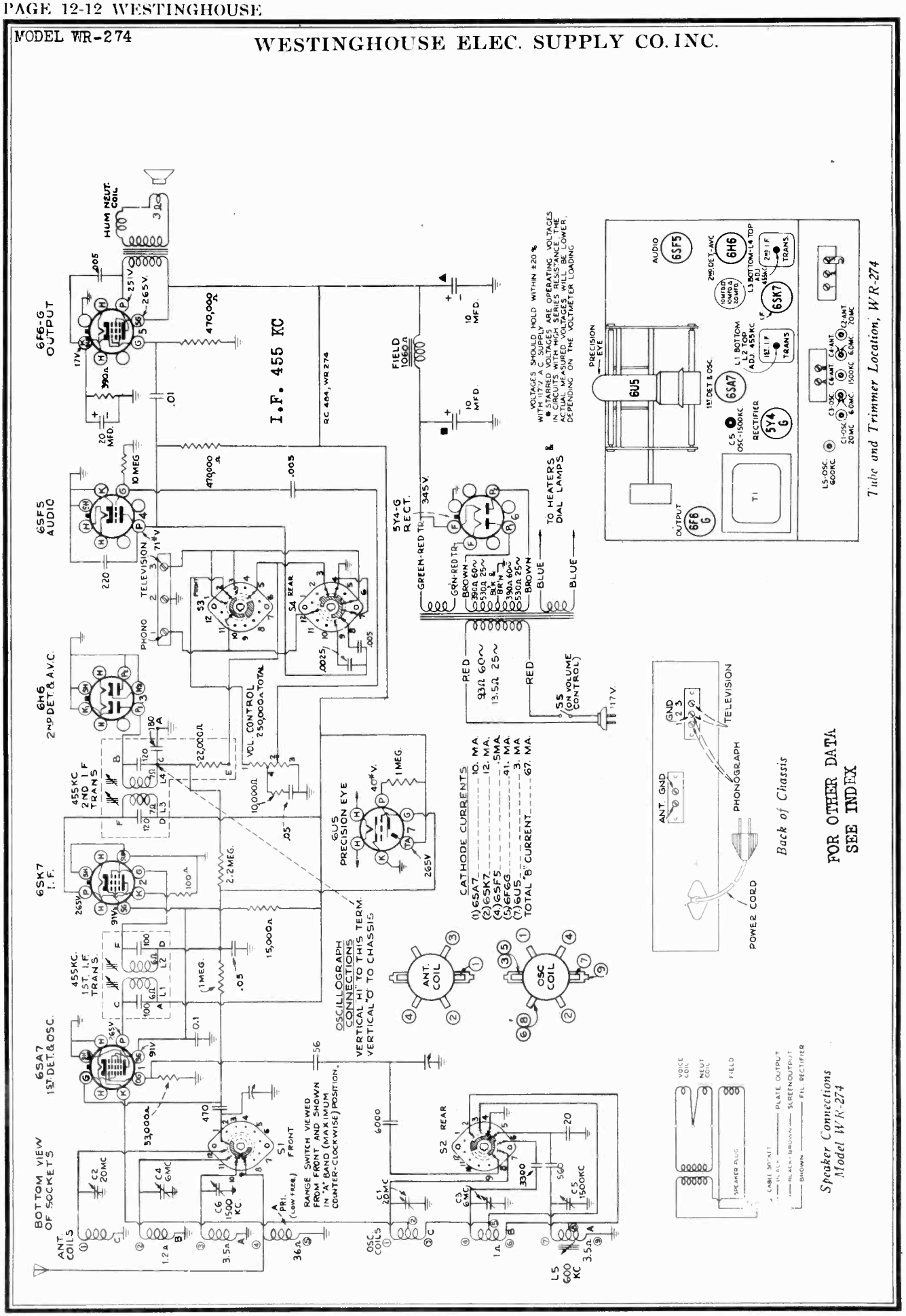
DIAL LAMP ..... Mazda 51, 7.5 volts, 0.2 amp.

FOR OTHER DATA
SEE INDEX

Model WR-272, Tube and Trimmer Locations

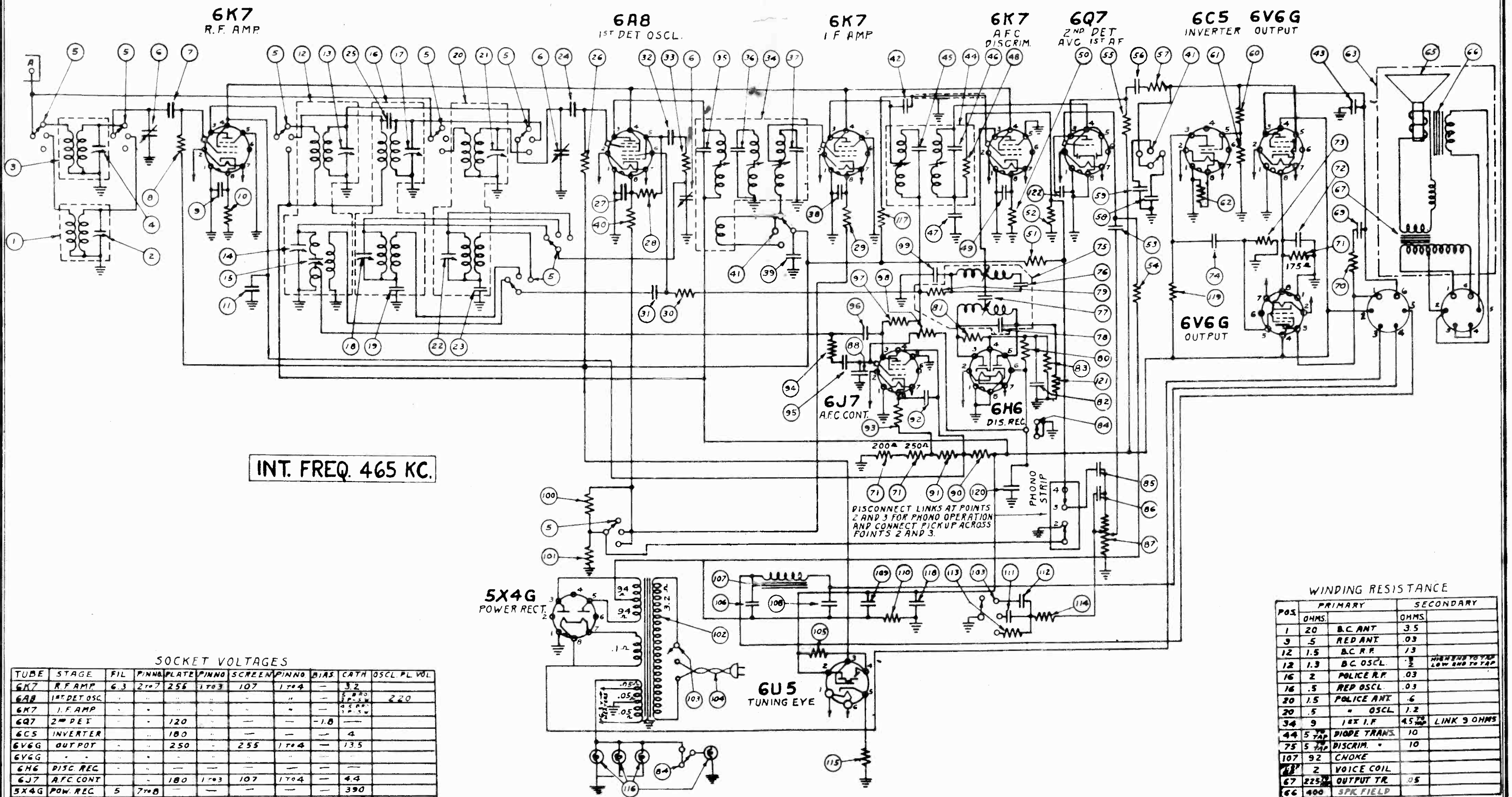
MODEL WR-274

WESTINGHOUSE ELEC. SUPPLY CO. INC.



MODEL WR-334

WESTINGHOUSE ELEC. SUPPLY CO. INC.



SOCKET VOLTAGES

TUBE	STAGE	FIL	PIN NO.	PLATE	PIN NO.	SCREEN	PIN NO.	BIAS	CATH	OSCL. PL. VOL.
6K7	R.F. AMP	6.3	2 TO 7	256	1 TO 3	107	1 TO 4	—	3.2	
6A8	1ST DET OSC	"	"	"	"	"	"	—	5 BRO 3 P-S W	220
6K7	I. F. AMP	"	"	"	"	"	"	—	4.5 BRO 3 P-S W	
6Q7	2ND DET	"	"	120	"	—	—	-1.8	—	
6C5	INVERTER		"	180	"	—	—	—	4	
6V6G	OUTPUT	"	"	250	"	255	1 TO 4	—	13.5	
6V6G	" "	"	"	"	"	"	"	"	"	
6H6	DISC. REC.	"	"	—	—	—	—	—	—	
6J7	A.F.C. CONT		"	180	1 TO 3	107	1 TO 4	—	4.4	
5X4G	POW. REC	5	7 TO 8	—	—	—	—	—	390	
6U5	EYE	6.3	1 TO 6	255	—	—	—	—	175	

WINDING RESISTANCE

POS.	PRIMARY OHMS.	PRIMARY	SECONDARY OHMS.	SECONDARY
1	20	B.C. ANT	3.5	
3	.5	RED ANT.	.03	
12	1.5	B.C. R.F.	13	
12	1.3	B.C. OSCL.	[illegible]	HIGH END TO TAP / LOW END TO TAP
16	2	POLICE R.F.	.03	
16	.5	RED OSCL.	.03	
20	1.5	POLICE ANT.	.6	
20	.5	" OSCL.	1.2	
34	9	1ST I.F.	4.5 TO TAP	LINK 9 OHMS
44	5 TO TAP	DIODE TRANS.	10	
75	5 TO TAP	DISCRIM. "	10	
107	92	CHOKE		
[illegible]	2	VOICE COIL		
67	225	OUTPUT TR.	.05	
66	400	SPK FIELD		

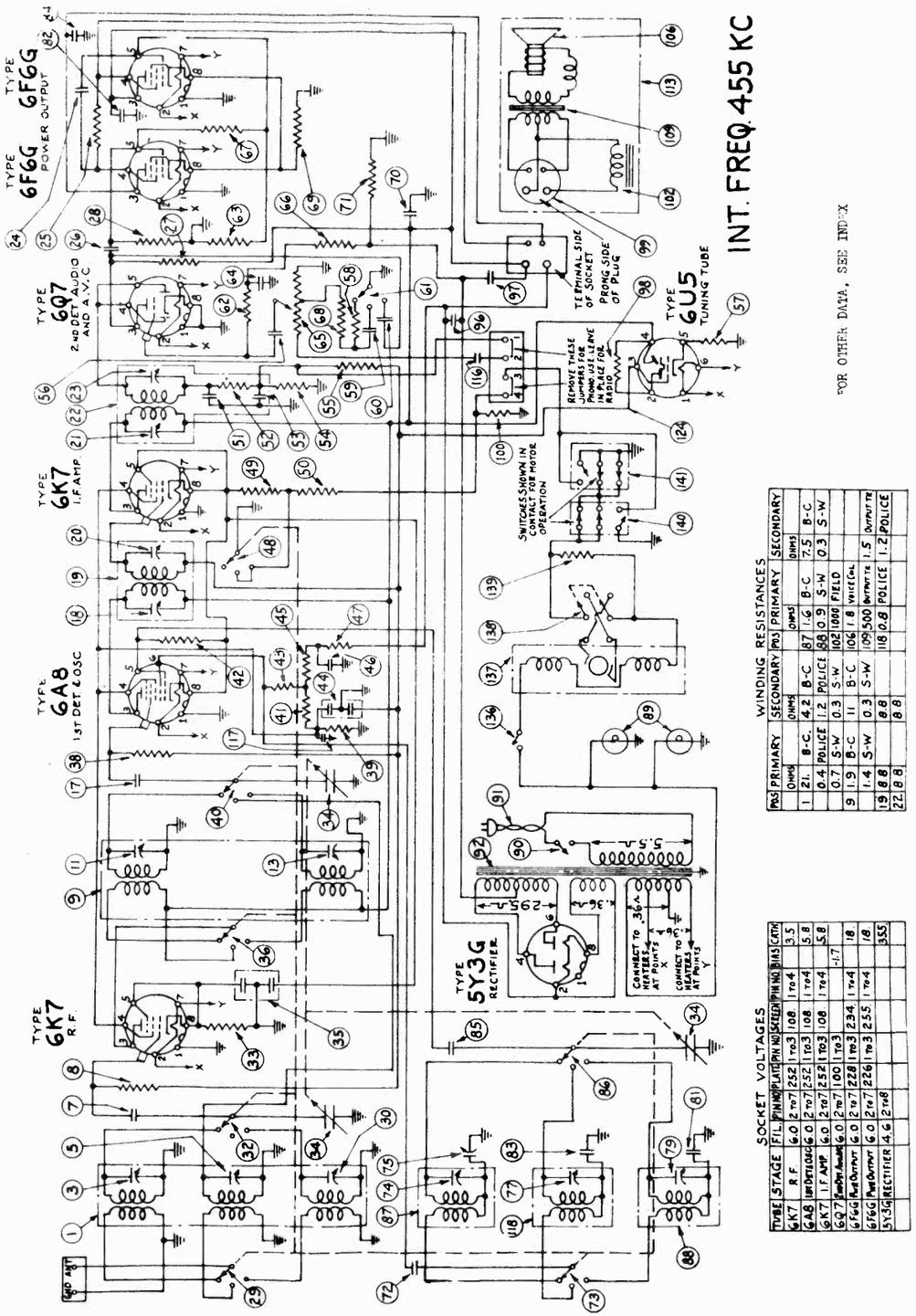
ELECTRICAL SPECIFICATIONS

Power Consumption ---------- 115 Watts
Maximum Output ---------- 14 Watts
Maximum Undistorted Output ---------- 10 Watts
Tuning Ranges ---------- (Brown Band 535 - 1800 KC. / (Green Band 1700 - 6000 KC. / (Red Band 5800 - 18500 KC.
Line-Up Frequencies ---------- I.F. 465 KC., 1500 KC., 600 KC., 5000 KC., 16,000 KC.

FOR OTHER DATA, SEE INDEX

WESTINGHOUSE ELEC. SUPPLY CO. INC.

MODEL WR-342



WINDING RESISTANCES

TYPE	STAGE	PIN POS	PRIMARY OHMS	PRIMARY	SECONDARY OHMS	SECONDARY
6K7	R.F.	1	21.	B-C	4.2	B-C
6A8	1ST DET OSC		0.4	POLICE	1.2	POLICE
6K7	I.F. AMP		0.7	S-W	0.3	S-W
6Q7	2ND DET AUDIO	9	1.9	B-C	11	B-C
6F6G	PWR OUTPUT		1.4	S-W	0.3	S-W
6F6G	PWR OUTPUT		19	8.8	8.8	
5Y3G	RECTIFIER		22	8.8	8.8	

SOCKET VOLTAGES

TYPE	STAGE	FIL.	PIN NO. PLATE	PIN NO. SCREEN	PIN NO. BIAS	CATH
6K7	R.F.	6.0	2 to 7 252	1 to 3 108	1 to 4	3.5
6A8	1ST DET OSC	6.0	2 to 7 252	1 to 3 108	1 to 4	5.8
6K7	I.F. AMP	6.0	2 to 7 252	1 to 3 108	1 to 4	5.8
6Q7	2ND DET AUDIO	6.0	2 to 7 100	1 to 3		-1.7
6F6G	PWR OUTPUT	6.0	2 to 7 228	1 to 3 234	1 to 4	18
6F6G	PWR OUTPUT	6.0	2 to 7 226	1 to 3 255	1 to 4	18
5Y3G	RECTIFIER	4.6	2 to 8			355

MODEL WR-334
MODEL WR-342

WESTINGHOUSE ELEC. SUPPLY CO. INC.

MODEL WR-334

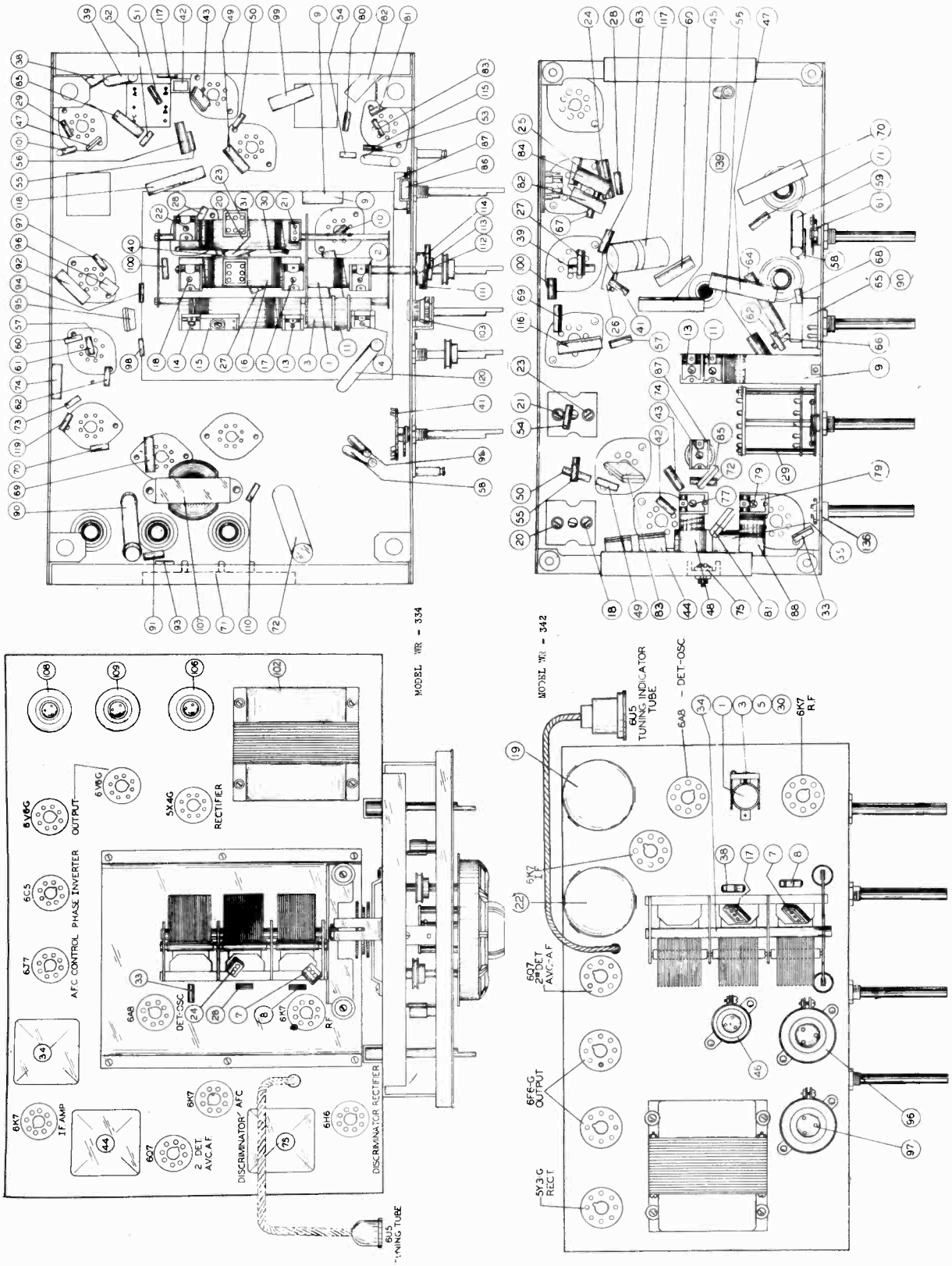
Dia. #	Part #	Description of Parts
1	RC 95312	Short-wave antenna coil
2		4-35 mmf. trimmer - part of RC 95312
3	RC 95311	Broadcast antenna coil
4		4-35 mmf. trimmer - part of RC 95311
5	SW 9586	Wave change switch
6	CG 9566	Variable gang condenser
7	CM 9519	500 mmf. mica condenser .
8	RE 1043	100,000 ohm, 1/2 W. resistor
9	CW 2-05	.05 mfd., 200 V. condenser
10	RE 3313	330 ohm, 1/2 W. resistor
11	CW 4-10	.1 mfd., 400 V. condenser
12	RC 95313	Broadcast composite coil
13		4-35 mmf. trimmer - part of RC 95313
14		5-25 mmf. trimmer - part of RC 95313
15		300-600 mmf. oscillator lag cond. -
16	RC 95315	Short-wave composite coil
17-18		4-35 mmf. trimmer - part of RC 95315
19		.0034 mfd. oscillator lag condenser -
20	RC 95314	Police composite coil
21		10 mmf. trimmer - part of RC 95314
22		4-35 mmf. trimmer - part of RC 95314
23		.001 mfd. oscillator lag condenser -
24	CM 9519	500 mmf. mica condenser
25		10 mmf. mica condenser - part of RC 95315
26	RE 1043	100,000 ohm, 1/2 W. resistor
27	CW 2-05	.05 mfd., 200 V. condenser
28	RE 4733	47,000 ohm, 1/2 W. resistor
29	RE 2713	270 ohm, 1/2 W. resistor
30	RE 562412	5600 ohm, 1 W. resistor
31	CW 4-01	.01 mfd., 400 V. condenser
32	CM 9513	100 mmf. mica condenser
33	RE 1213	120 ohm, 1/2 W. resistor
34	IC 95117	1st I.F. transformer
35		100 mmf. trimmer - part of IC 95117
36-37		107 mmf. trimmer - part of IC 95117
38	CW 2-05	.05 mfd., 200 V. condenser
39	CW 4-05	.05 mfd., 400 V. condenser
40	RE 2213	220 ohm, 1/2 W. resistor
41	SW 9588	Treble control switch
42	CM 9546	5 mmf. mica condenser
43	CM 953	50 mmf. mica condenser
44	IC 95115	I.F. diode coil
45-46		107 mmf. trimmers - part of IC 95115
47	CM 9513	100 mmf. mica condenser
48	RE 4733	47,000 ohm, 1/2 W. resistor
49	CW 2-05	.05 mfd., 200 V. condenser
50	RE 3313	330 ohm, 1/2 W. resistor
51	RE 4743	470,000 ohm, 1/2 W. resistor
52	RE 4743	470,000 ohm, 1/2 W. resistor
53	CW 4-02	.02 mfd., 400 V. condenser
54	RE 4743	470,000 ohm, 1/2 W. resistor
55	RE 2243	220,000 ohm, 1/2 W. resistor
56	CW 4-02	.02 mfd., 400 V. condenser
57	RE 4733	47,000 ohm, 1/2 W. resistor
58	CW 6-003	.003 mfd., 600 V. condenser
59	CW 6-001	.001 mfd., 600 V. condenser
60	RE 3943	390,000 ohm, 1/2 W. resistor
61	RE 6853	68,000 ohm, 1/2 W. resistor
62	RE 5613	560 ohm, 1/2 W. resistor
63	SK 9584	Speaker
65	DM 9528	Speaker diaphragm assembly
66	CL 9570	Speaker field coil
67	TR 95151	Speaker output transformer
69	CW 6-001	.001 mfd., 600 V. condenser
70	RE 223412	22,000 ohm, 1 W. resistor
71	RE 95141	200-250 ohm - voltage divider resistor
72	CE 9569	12 mfd., 50 V. electrolytic condenser
73	RE 4743	470,000 ohm, 1/2 W. resistor
74	CW 4-02	.02 mfd., 400 V. condenser
75	IC 95116	Descriminator coil
76-78		107 mmf. trimmers - part of IC 95116
77		100 mmf. trimmers - part of IC 95116
79	RE 2222	2200 ohm, 1/2 W. resistor
80	RE 1053	1 meg., 1/2 W. resistor
81	RE 4743	470,000 ohm, 1/2 W. resistor
82	CW 4-05	.05 mfd., 400 V. condenser
83	RE 1053	1 meg., 1/2 W. resistor
84	SW 9589	A.F.C. switch
85	CW 4-02	.02 mfd., 400 V. condenser
86	CM 953	50 mmf. mica condenser
87	VR 9555	2 meg. mid-tapped volume control
88	CM 9516	25 mmf. mica condenser
90	RE 1036	10,000 ohm, 1/2 W. resistor
91	RE 1534	15,000 ohm, 1/2 W. resistor
92	CW 4-05	.05 mfd., 400 V. condenser
93	RE 3313	330 ohm, 1/2 W. resistor
94	RE 4733	47,000 ohm, 1/2 W. resistor
95	CM 953	50 mmf. mica condenser
96	CM 9519	500 mmf. mica condenser
97	RE 4733	47,000 ohm, 1/2 W. resistor
98	RE 4743	47,000 ohm, 1/2 W. resistor
99	CW 4-05	.05 mfd., 400 V. condenser
100	RE 1013	100 ohm, 1/2 W. resistor
101	RE 2233	22,000 ohm, 1/2 W. resistor
102	TR 95125	Power transformer 105-125 V., 50-60 cy
103	SW 9587	On-Off and bass switch
10	CB 9512	Line cable
10		1 meg. resistor - part of CB 95151
10	CE 9554	18 mfd., 450 V. electrolytic condenser
10	TR 9573	Choke
108	CE 9570	18 mfd., 450 V. electrolytic condenser
109	CE 9562	18 mfd., 300 V. electrolytic condenser
110	RE 1203	12 ohm, 1/2 W. resistor
111	CW 6-005	.005 mfd., 600 V. condenser
112	CW 6-002	.002 mfd., 200 V. condenser
113	RE 1043	100,000 ohm, 1/2 W. resistor
114	RE 1043	100,000 ohm, 1/2 W. resistor
115	RE 3313	330 ohm, 1/2 W. resistor
116	LP 9510	Dial lamp 6.3 V., .25 amp.
117	RE 4743	470,000 ohm, 1/2 W. resistor
118	CW 4-10	.1 mfd., 400 V. condenser
119	RE 1033	10,000 ohm, 1/2 W. resistor
120	CW 4-10	.1 mfd., 400 V. condenser
12	RE 4743	470,000 ohm, 1/2 W. resistor
122	CW 6-001	.001 mfd., 600 V. condenser

MODEL WR-342

Dia. #	Part #	
1	RC 95306	Antenna composite coil
3,5		4-35 mmf. trimmer condenser
7	CM 9519	.0005 mfd. mica condenser
8	RE 2743	270,000 ohm, 1/2 W. resistor
9	RC 95307	R.F. composite coil
11,13		4-35 mmf. trimmer condenser
17	CM 9519	.0005 mfd. mica condenser
18		80-200 mmf. trimmer condenser
19	IC 95119	1st I.F. coil assembly
20		80-200 mmf. trimmer condenser
21		80-200 mmf. trimmer condenser
22	IC 95120	2nd I.F. coil assembly
23		80-200 mmf. trimmer condenser
24	CW 4-01	.01 mfd., 400 V. condenser
25	RE 1023	1,000 ohm, 1/2 W. resistor
26	CW 4-02	.02 mfd., 400 V. condenser
27	RE 1043	100,000 ohm, 1/2 W. resistor
28	RE 1843	180,000 ohm, 1/2 W. resistor
29	SW 95103	Wave-change switch
30		4-35 mmf. trimmer condenser
33	RE 3913	390 ohm, 1/2 W. resistor
34	CG 9576	Gang condenser
35	CW 9535	.1-.1 mfd., 400 V. dual condenser
38	RE 2743	270,000 ohm, 1/2 W. resistor
39	RE 6833	68,000 ohm, 1/2 W. resistor
41	RE 1033	10,000 ohm, 1/2 W. resistor
42	RE 4733	47,000 ohm, 1/2 W. resistor
43	RE 472412	4700 ohm, 1 W. resistor
44	CW 9535	.1-.1 mfd., 400 V. dual condenser
45	RE 103522	10,000 ohm, 2 W. resistor
46	CE 9568	8 mfd., 450 V. electrolytic condenser
47	RE 682522	6800 ohm, 2 W. resistor
49	RE 1513	150 ohm, 1/2 W. resistor
50	RE 1513	150 ohm, 1/2 W. resistor
51	CM 9513	.0001 mfd. mica condenser
52	RE 4733	47,000 ohm, 1/2 W. resistor
53	CM 9513	.0001 mfd. mica condenser -
54	RE 4743	470,000 ohm, 1/2 W. resistor
55	RE 4743	470,000 ohm, 1/2 W. resistor
56	CW 2-02	.02 mfd., 200 V. condenser
57	RE 2713	270 ohm, 1/2 W. resistor
58	RE 1043	100,000 ohm, 1/2 W. resistor
59	CW 6-002	.002 mfd., 600 V. condenser
60	CW 4-02	.02 mfd., 400 V. condenser
61	SW 95102	Tone control switch
62	RE 2253	2.2 meg., 1/2 W. resistor
63	RE 4743	470,000 ohm, 1/2 W. resistor
64	CW 2-10	.1 mfd., 200 V. condenser
65	VR 9561	Volume control - 2 meg. mid-tapped
66	RE 4743	470,000 ohm, 1/2 W. resistor
67	RE 3343	330,000 ohm, 1/2 W. resistor
68	RE 1043	100,000 ohm, 1/2 W. resistor
69	RE 271412	270 ohm, 1 W. resistor
70	CW 4-10	.1 mfd., 400 V. condenser
71	RE 1803	18 ohm, 1/2 W. resistor
72	CW 6-005	.005 mfd., 600 V. condenser
74		4-35 mmf. trimmer condenser - part of RC 95308
75	CS 9585	225-700 mmf. oscillator series (lag) condenser
77		4-35 mmf. trimmer condenser - part of RC 95309
79		4-35 mmf. trimmer condenser - part of RC 95310
80	CM 9545	4,050 mmf. mica condenser
82	CW 6-002	.002 mfd., 600 V. condenser
83	CM 9544	1375 mmf. mica condenser ...
84	CW 6-002	.002 mfd., 600 V. condenser
85	CM 9513	.0001 mfd. mica condenser
87	RC 95308	Broadcast oscillator coil
88	RC 95310	Short-wave oscillator coil
89	LP 9510	Dial lamp - 6.3 Volt, .25 Amp.
90		Switch - part of VR 9561
91	CB 9512	Line cable and plug assembly
92	TR 95162	Power transformer - 105-125 V., 50-60 Cycle
96	CE 9554	18 mfd., 450 V. electrolytic condenser
97	CE 9562	18 mfd., 300 V. electrolytic condenser
98		1 meg., 1/4 W. resistor - part of CB 95151
99		Speaker plug - part of speaker
100	RE 1033	10,000 ohm, 1/2 W. resistor
102	CL 9572	Speaker field coil
106	DM 9528	Speaker diaphragm
109	TR 95150	Speaker output transformer
113	SK 9585	Speaker
116	CW 2-02	.02 mfd., 200 V. condenser
117	CW 9547	.5 mfd., 400 V. condenser
118	RC 95309	Police oscillator coil
124	CB 95151	Tuning tube cable and plug assembly
136	SW 95101	Switch
137	MO 951	Motor
138	SW 9582	Motor reversing switch
139	RE 95144	1.5 ohm resistor
140	SW 9584	Switch
141	SW 9599	Switch

WESTINGHOUSE ELEC. SUPPLY CO. INC.

MODEL WR-334
MODEL WR-342



MODEL WR-334
MODEL WR-342

WESTINGHOUSE ELEC. SUPPLY CO. INC.

MODEL WR - 334

To properly align the circuits of the receiver, it is essential to use a high grade modulated test oscillator, the output of which can be continuously varied when the individual circuits are brought into alignment. A conventional output meter should be connected across the speaker voice coil terminals to indicate proper alignment. The sensitivity of the output meter must be sufficient to give a satisfactory reading with a low input signal.

A zero center micro-ammeter with an approximate 0-30 scale is absolutely essential for the proper alignment of the discriminator circuit.

Before attempting to align the receiver, the circuit, position of alignment adjustments and chassis layout should be familiarized. The top and bottom views of the chassis are shown in figures #1 and #2.

ADJUSTMENT OF THE I.F. DIODE COIL 465 KC.

1. Refer to bottom view of chassis and connect a 20,000 ohm resistor between points "C" and "D" under 2nd I.F. coil #44.
2. Turn the receiver "ON" and to the position immediately after set is turned on. Set volume control on full. Set A.P.C. switch in "OFF" position. Set high fidelity control in a left hand or MINIMUM position. Set wave change switch to broadcast position.

3. Connect the output meter across the speaker voice coil.

4. Set the test oscillator to 465 KC. and adjust the output to give a readable deflection of the output meter when the signal is applied to the grid of the 6K7 I.F. tube through a .5 mfd. blocking condenser.

5. Adjust the bottom adjustment screw on coil #44 for maximum output.

6. Remove the 20,000 ohm resistor from points "C" and "D" and connect between points "A" and "B".

7. Adjust the top adjustment screw on coil #44 for maximum output.

8. Remove the 20,000 ohm resistor.

ALIGNMENT OF DISCRIMINATOR COIL

1. Connect the micro-ammeter between the #4 terminal of the 6H6 discriminator rectifier tube and ground.

2. With test signal still applied to the I.F. tube increase the signal output of the oscillator.

3. Adjust the bottom screw on the discriminator coil #75 for maximum deflection of the micro-ammeter (either direction).

4. Adjust the top screw on the discriminator coil until a zero reading on the micro-ammeter is reached. To check this alignment, vary the I.F. signal slightly to each side of the 465 setting and the micro-ammeter should show a deflection first on one side then the other of the zero point.

ADJUSTMENT OF 1ST I.F. COIL 465 KC.

1. Apply the test signal to the grid of the 6A8 detector-oscillator tube through a .5 mfd. blocking condenser.

2. Adjust first the bottom, second the middle and third the top alignment screws on I.F. coil #34 for maximum output.

ADJUSTMENT OF THE BROADCAST BAND

1. With the gang condenser completely in mesh, check the position of the dial pointer which should be at the end horizontal line of the scale.

2. Set the test oscillator and dial pointer to 1500 KC.

3. Adjust the oscillator trimmer #14.

4. Connect the test oscillator to the antenna terminal of the receiver through a .0002 mfd. condenser.

5. Adjust the R.F. and antenna trimmers #13 and #4 for maximum output.

6. Set the test oscillator and dial pointer to 600 KC.

7. Adjust the oscillator series (lag) condenser #15 at the same time turning the gang condenser slightly back and forth until a maximum is reached.

8. Return the test oscillator and dial pointer to the 1500 KC. setting and recheck trimmers #14, #13 and #4.

9. Check sensitivity and calibration over the scale.

NOTE: In adjusting the two remaining bands, a .0002 mfd. condenser and a 400 ohm resistor connected in series should be inserted between the test oscillator and the antenna terminal of the receiver. This combination is the approximate equivalent of a short wave antenna.

ADJUSTMENT OF THE GREEN BAND

1. Turn the wave change switch to the green band position.

2. Set the test oscillator and dial pointer at 5000 KC.

3. Adjust the oscillator trimmer #22.

4. Check sensitivity and calibration over the scale.

ADJUSTMENT OF THE RED BAND

1. Turn the wave change switch to the red band position.

2. Set the test oscillator and dial pointer at 16,000 KC.

3. Adjust the oscillator trimmer #18. Two positions may be found at which the signal can be heard. Use the one with the least capacity or with the trimmer farther out.

4. Adjust the R.F. and antenna trimmers #17 and #2 for maximum output.

5. Check calibration and sensitivity over the scale.

MODEL WR - 342

This model is an eight-tube, alternating-current, three-band, superheterodyne receiver, designed to operate over the standard broadcast band, extending from 535 to 1800 KC. The first short-wave band includes frequencies between 1730 and 6000 KC., and the second short-wave band includes frequencies between 5700 and 18,500 KC.

LINE-UP CAPACITOR ADJUSTMENTS

To properly align the circuits of this receiver, it is essential to use a high grade modulated test oscillator, the output of which can be continuously varied and reduced sufficiently to prevent overload as the individual circuits of the receiver are brought into alignment. A conventional output meter should be connected across the terminals of the speaker voice coil to indicate when the individual circuits are correctly aligned. The sensitivity of the meter must be sufficient to give satisfactory readings with low input signals.

ALIGNMENT OF I.F. (456 KC.)

1. Set the volume control to maximum position, the wave-change switch to the standard broadcast band and the dial pointer to approximately 600 KC.

2. Connect the output meter across the voice coil terminals of the speaker.

3. Set the test oscillator to 455 KC., and adjust its output to produce a measurable reading on the output meter when the test signal is applied to the grid of the first detector-oscillator tube through a 0.5 mfd. blocking condenser.

4. Adjust the four I.F. trimmer condensers #18, #20, #21 and #23 to maximum output.

ALIGNMENT OF BROADCAST BAND

1. Check the pointer setting to be sure that it is exactly horizontal when the tuning condenser is completely closed.

2. Set the oscillator and dial indicator at 1500 KC., and adjust the broadcast oscillator trimmer #74.
3. Set the test oscillator and dial pointer to 600 KC.

4. Adjust the oscillator lag condenser #75 for maximum output, at the same time rocking the gang condenser.

5. Reset test oscillator and gang condenser to 1500 KC., and recheck operation #2.

6. Connect the test oscillator to the antenna terminal through a .0002 mfd. condenser and adjust the R.F. and antenna trimmers #11 and #3.

7. Check sensitivity and calibration over the scale.

NOTE: In adjusting the two short-wave bands, a .0002 mfd. condenser and a 400 ohm resistor in series should be inserted between the antenna terminal and the high side of the test oscillator. This combination is the approximate equivalent of a short-wave antenna.

ALIGNMENT OF FIRST SHORT-WAVE BAND

1. Turn the wave-change switch to the first short-wave position (1730-6000 KC. scale).

2. Set the test oscillator and dial pointer to 5200 KC., and adjust the oscillator and antenna trimmers #77 and #5.

3. Check sensitivity and calibration over the scale.

ALIGNMENT OF SECOND SHORT-WAVE BAND

1. Turn the wave-change switch to the second short-wave position (5700-18,500 KC. scale).

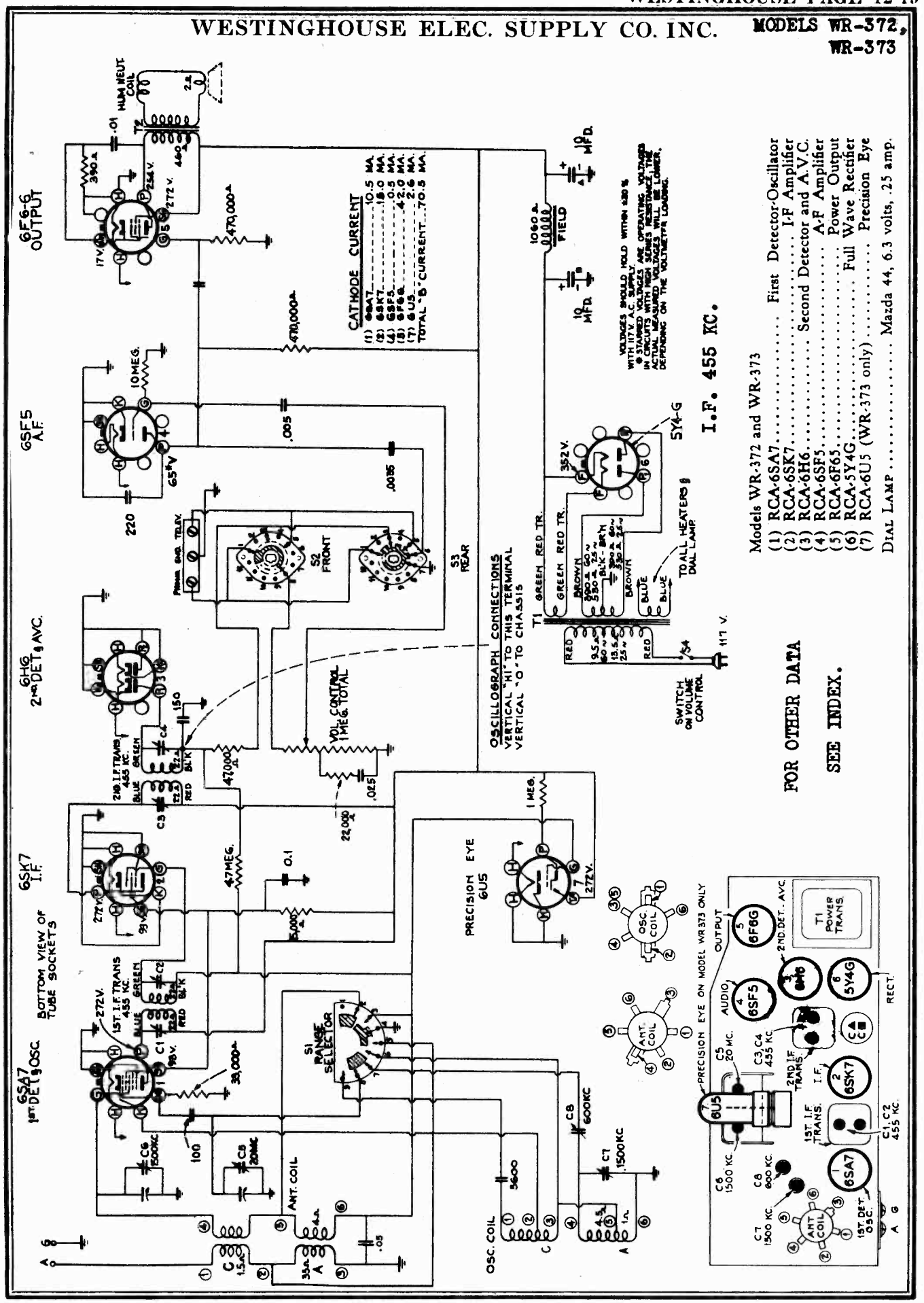
2. Set the test oscillator and dial pointer to 16,500 KC., and adjust the oscillator trimmer #79. Two positions may be found. Use the one with the least capacity, that is, with the trimmer screw farthest out.

3. Adjust the antenna trimmer #30.

4. Check sensitivity and calibration over the scale.

WESTINGHOUSE ELEC. SUPPLY CO. INC.

MODELS WR-372, WR-373



Models WR-372 and WR-373

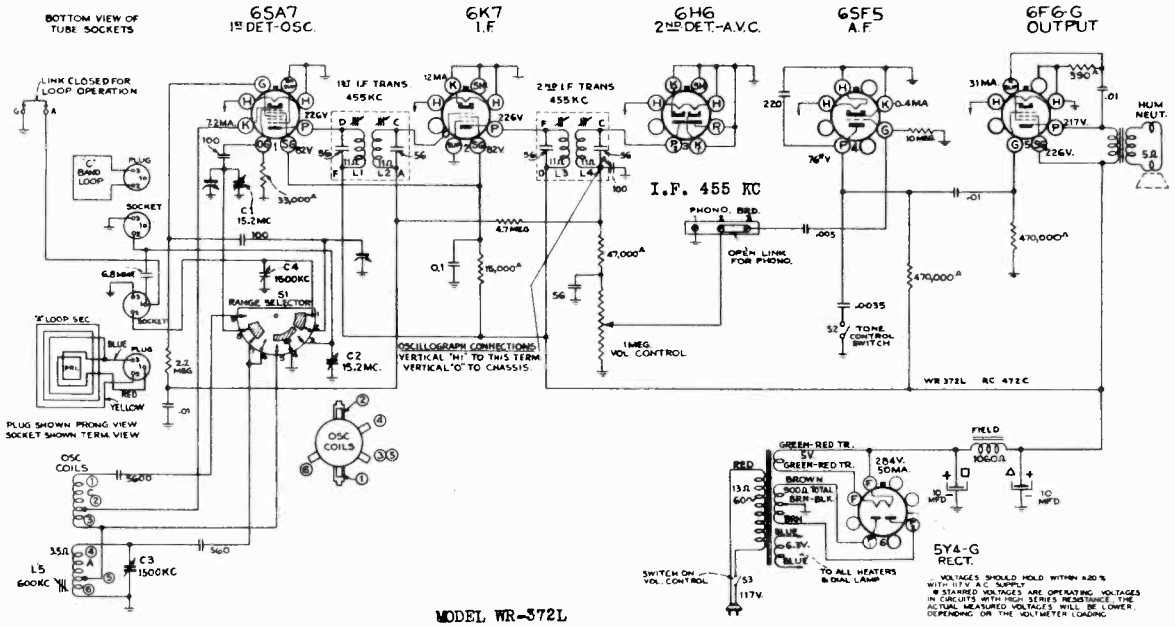
(1) RCA-6SA7 ..... First Detector-Oscillator
(2) RCA-6SK7 ..... I-F Amplifier
(3) RCA-6H6 ..... Second Detector and A.V.C.
(4) RCA-6SF5 ..... A-F Amplifier
(5) RCA-6F65 ..... Power Output
(6) RCA-5Y4G ..... Full Wave Rectifier
(7) RCA-6U5 (WR-373 only) ..... Precision Eye

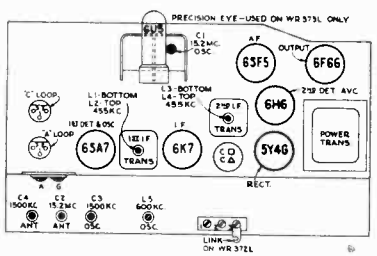
DIAL LAMP ..... Mazda 44, 6.3 volts, .25 amp.

FOR OTHER DATA SEE INDEX.

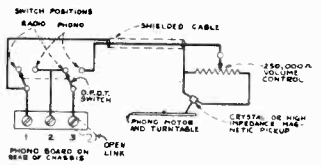
MODEL WR-372L
MODEL WR-373L

WESTINGHOUSE ELEC. SUPPLY CO. INC.





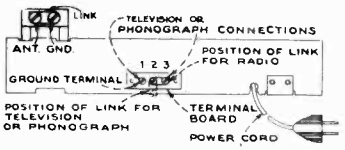
Tube and Trimmer Locations



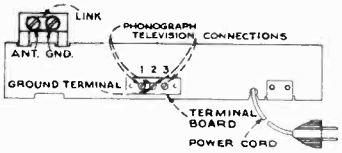
Record Player Connections, Using a Double-Pole Double-Throw Toggle Switch (Model WR-372L)

FOR OTHER DATA

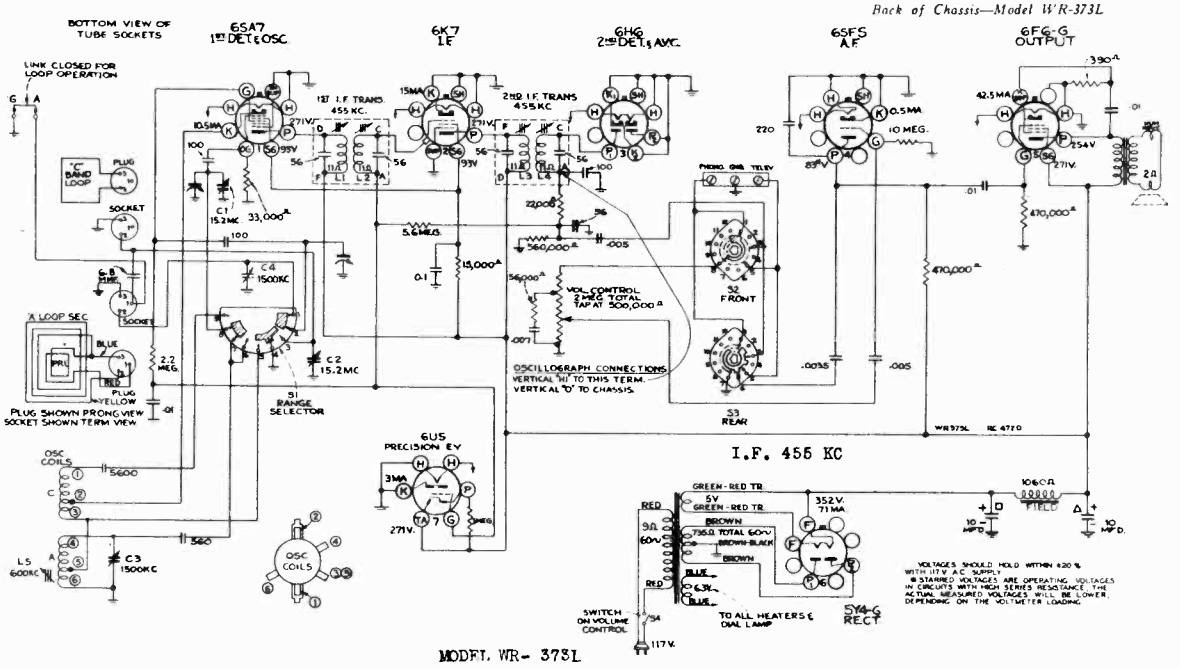
SEE INDEX



Back of Chassis—Model WR-372L

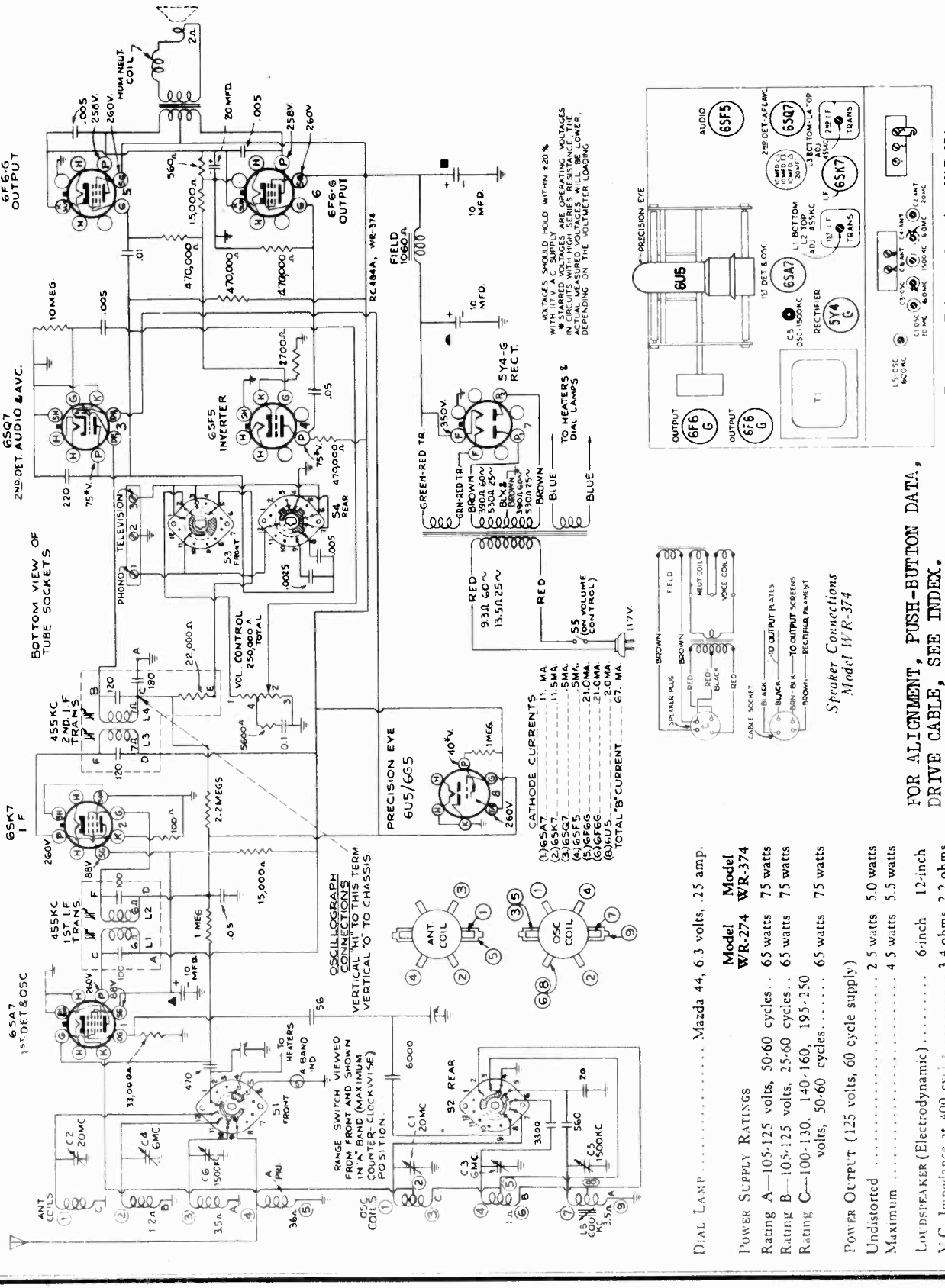


Back of Chassis—Model WR-373L



WESTINGHOUSE ELEC. SUPPLY CO. INC.

MODEL WR-374



DIAL LAMP	Mazda 44, 6.3 volts, .25 amp.

POWER SUPPLY RATINGS	Model WR-274	Model WR-374
Rating A—105-125 volts, 50-60 cycles..	65 watts	75 watts
Rating B—105-125 volts, 25-60 cycles..	65 watts	75 watts
Rating C—100-130, 140-160, 195-250 volts, 50-60 cycles.....	65 watts	75 watts

POWER OUTPUT (125 volts, 60 cycle supply)	
Undistorted	2.5 watts 5.0 watts
Maximum	4.5 watts 5.5 watts
LOUDSPEAKER (Electrodynamic)	6-inch 12-inch
V.C. Impedance at 400 cy[illegible]	3.4 ohms 2.2 ohms

FOR ALIGNMENT, PUSH-BUTTON DATA, DRIVE CABLE, SEE INDEX.

Tube and Trimmer Location, WR-374

Steps	Connect the high side of the test-osc. to—	Tune test-osc. to—	Turn radio dial to—	Adjust the following for maximum peak output
1	6SK7 grid in series with .01 mfd.	455 kc	"A" band Quiet point between 550-750 kc	L3 and L4 (2nd I-F trans.)
2	6SA7 grid in series with .01 mfd.			L1 and L2 (1st I-F trans.)
3	Ant. terminal in series with 300 ohms	20 mc	20 mc (200°) "C" band	C1 (osc.)* C2 (ant.)
4		6 mc	6 mc (187.5°) "B" band	C3 (osc.)** C4 (ant.)
5	Ant. terminal in series with 200 mmfd.	1,500 kc	1,500 kc (198.25°) "A" band	C5 (osc.) C6 (ant.)
6		600 kc	600 kc (39.75°) "A" band	L5 (osc.) Rock gang
7	Repeat step 5.			

* Use **minimum** capacity peak if two can be obtained. Check to determine that C1 has been adjusted to correct peak by tuning receiver to approximately 19.09 mc where a weaker signal should be received.

** Use **minimum** capacity peak if two can be obtained. Check to determine that C3 has been adjusted to correct peak by tuning receiver to approximately 5.09 mc where a weaker signal should be received.

Note.—Oscillator tracks **above** signal on all bands.

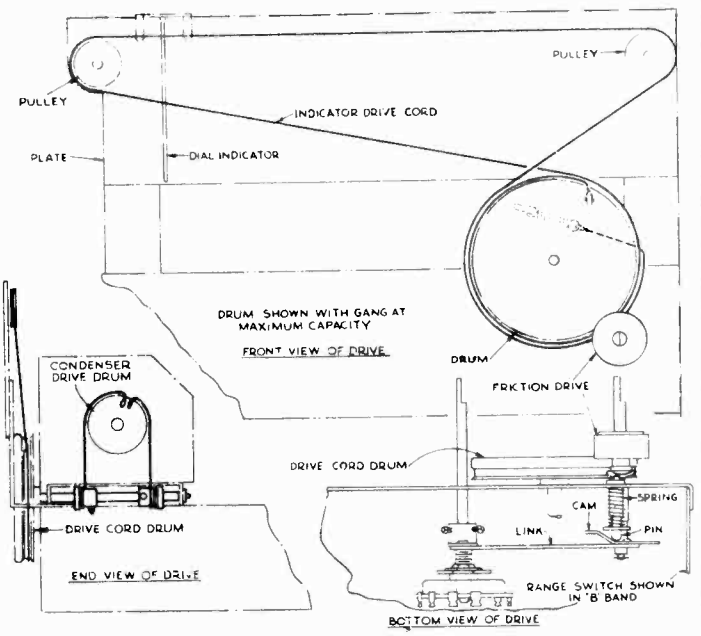
Loudspeaker.—To center the loudspeaker voice coil, first remove the front dust cover, then loosen the screws holding the spider assembly. Insert three narrow feelers into the air gap, and tighten the spider screws. Remove the feelers and fasten a dust cover in place with loudspeaker cement.

Phonograph or Television Attachment.—A terminal board is provided on the rear of the chassis for connecting a record player or Television attachment into the audio-amplifying circuit. The cable from the record player should be connected to terminals 1 and 2, the cable from the Television attachment going to terminals 2 and 3. Terminal 2 is chassis ground and the shield or ground lead from either of the attachments should be connected to this terminal.

Precautionary Lead Dress.—

On Model WR-274, the lead from 6SF5 plate to 6F6G should be dressed close to chassis.

Power cord should be dressed away from power transformer.



Adjustments for Push-Button Tuning

The push-buttons should be adjusted for six favorite stations after the receiver has been operating for a brief warm-up period. Each button may be set up to any standard broadcast station. The preferable arrangement is to adjust for stations in the order of frequency, from low to high. Proceed as follows:

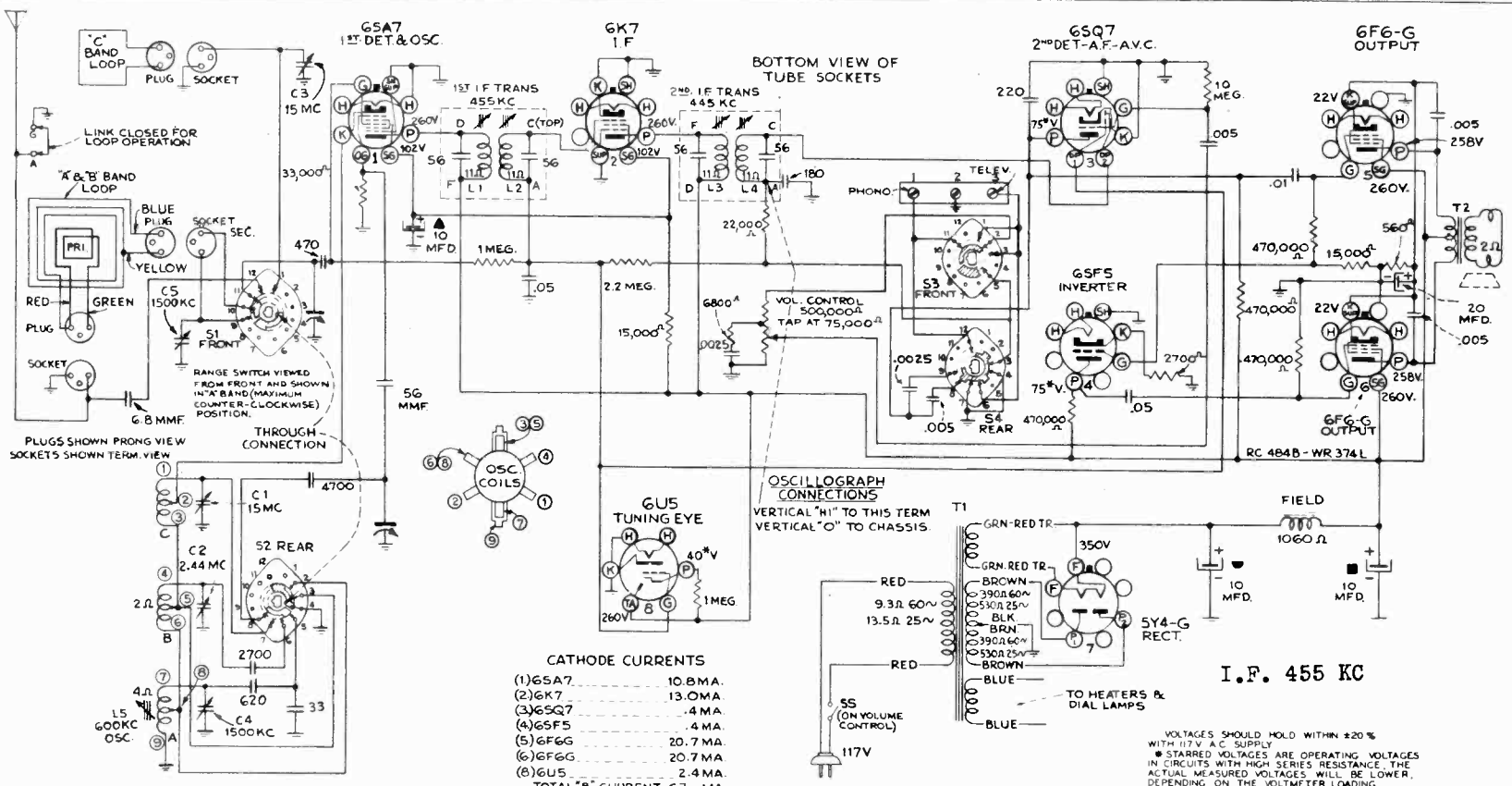
1. Loosen the push-buttons by turning counter-clockwise about one turn from their tight position so they turn freely.

2. Check to be sure the Phono-Radio switch is in "Radio" position.

3. Press in push-button No. 1 (left) as far as it will go without undue pressure, hold in, retune station with manual control if necessary for best reception, and then carefully tighten up the button. Do not tighten more than ¼ turn after the screw begins to grip or damage to the mechanism may result.

4. Proceed in a similar manner for the remainder of the push-buttons.

5. Insert the station marker tabs in the recesses above the push-buttons.

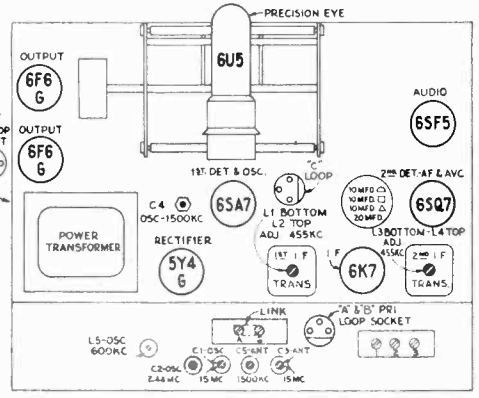


I.F. 455 KC

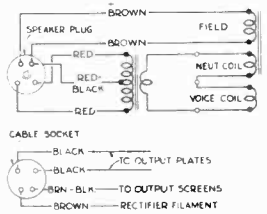
CATHODE CURRENTS

(1) 6SA7	10.8 MA.
(2) 6K7	13.0 MA.
(3) 6SQ7	.4 MA.
(4) 6SF5	.4 MA.
(5) 6F6G	20.7 MA.
(6) 6F6G	20.7 MA.
(8) 6U5	2.4 MA.
TOTAL "B" CURRENT	67. MA.

VOLTAGES SHOULD HOLD WITHIN ±20% WITH 117 V. A.C. SUPPLY
* STARRED VOLTAGES ARE OPERATING VOLTAGES IN CIRCUITS WITH HIGH SERIES RESISTANCE. THE ACTUAL MEASURED VOLTAGES WILL BE LOWER, DEPENDING ON THE VOLTMETER LOADING



Tube and Trimmer Location



Speaker Connections

POWER OUTPUT (125 volts, 60 cycle supply)

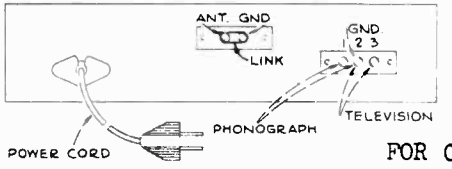
Undistorted	5.0 w
Maximum	5.5 w

POWER SUPPLY RATINGS

Rating A	105-125 volts, 50-60 cycles, 75 watts
Rating B	105-125 volts, 25-60 cycles, 75 watts
Rating C	100-130, 140-160, 195-250 volts, 50-60 cycles, 75 watts

LOUDSPEAKER

Electrodynamic	12-inch
V.C. Impedance at 400 cycles	2.2 ohms

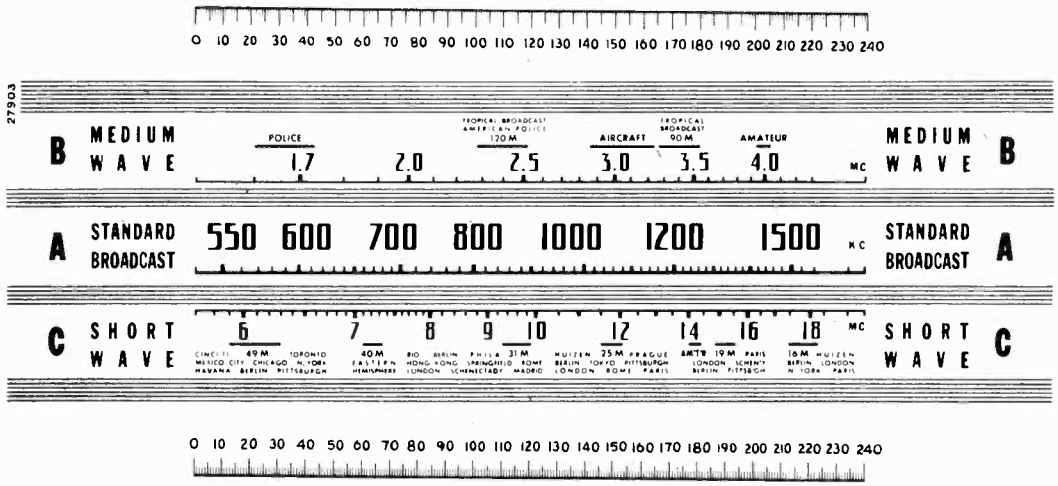


Back of Chassis

FOR OTHER DATA SEE INDEX

MODEL WR-374L
MODELS WR-476

WESTINGHOUSE ELEC. SUPPLY CO. INC.



Receiver Dial Scales, and Corresponding 0-240° Calibration Scales

The corresponding position of the dial indicator for any setting of the calibration scale can be determined by drawing a line from this point on the bottom calibration scale to the same point on the top calibration scale. For example, 37.5° on the calibration scale corresponds to 600 kc on "A" band. Read instructions under "Alignment Procedure."

Note: In the Dial Indicator Drive Cord Assembly drawing at the right the mechanism is shown with the range switch in the "B" band position. In the "A" band position the trip arm on the range shaft must be adjusted so that when the push-buttons are operated, the drive cord drum will turn freely without rubbing or binding against the drive roller.

Adjustments for Push-Button Tuning

The push-buttons should be adjusted for six favorite stations after the receiver has been operating for a brief warm-up period. Each button may be set up to any standard broadcast station. The preferable arrangement is to adjust for stations in the order of frequency, from low to high. Proceed as follows:

1. Loosen the push-buttons by turning counter-clockwise about one turn from their tight position so they turn freely.

2. Check to be sure the Phono-Radio switch is in "Radio" position.

3. Press in push-button No. 1 (left) as far as it will go without undue pressure, hold in, retune station with manual control if necessary for best reception, and then carefully tighten up the button. Do not tighten more than ¼ turn after the screw begins to grip or damage to the mechanism may result.

4. Proceed in a similar manner for the remainder of the push-buttons.

5. Insert the station marker tabs in the recesses above the push-buttons.

Alignment Procedure

Before proceeding with alignment the following lead dress should be carefully checked:

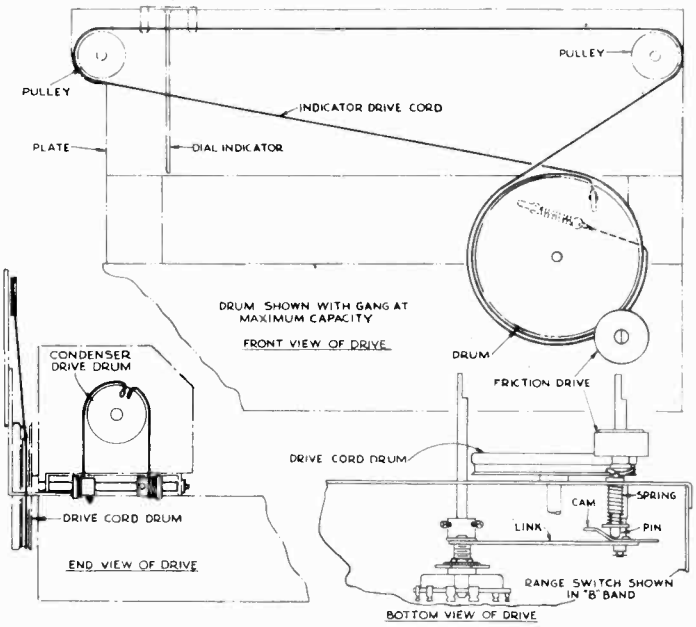
1. Dress AC switch leads away from tube sockets.

2. Do not twist loop leads together or around each other. Spacing between leads from "C" band loop to chassis is important—see alignment step "7" below.

3. "High side" leads from loop sockets, range switch, oscillator coil, and trimmers must be dressed away from chassis and each other.

4. Dress the 470 mmf. and 56 mmf. condensers going to the grid and osc. grid of the 6SA7 tube away from each other.

Calibration Scale on Indicator-Drive-Cord Drum. — The tuning dial is fastened in the cabinet and cannot be used for reference during alignment; therefore, a calibration scale is attached to the tuning drum. The setting of the gang condenser is read on this scale, which is calibrated in degrees. The correct setting of the gang in degrees, for each alignment frequency, is given in the alignment table.



As the first step in r-f alignment, check the position of the drum. The 120° mark on the drum scale must be vertical and directly under the center of the shaft of the tuning drum when the plates are fully meshed. The drum is held to the shaft by means of two set-screws, which must be tightened securely when the drum is in the correct position.

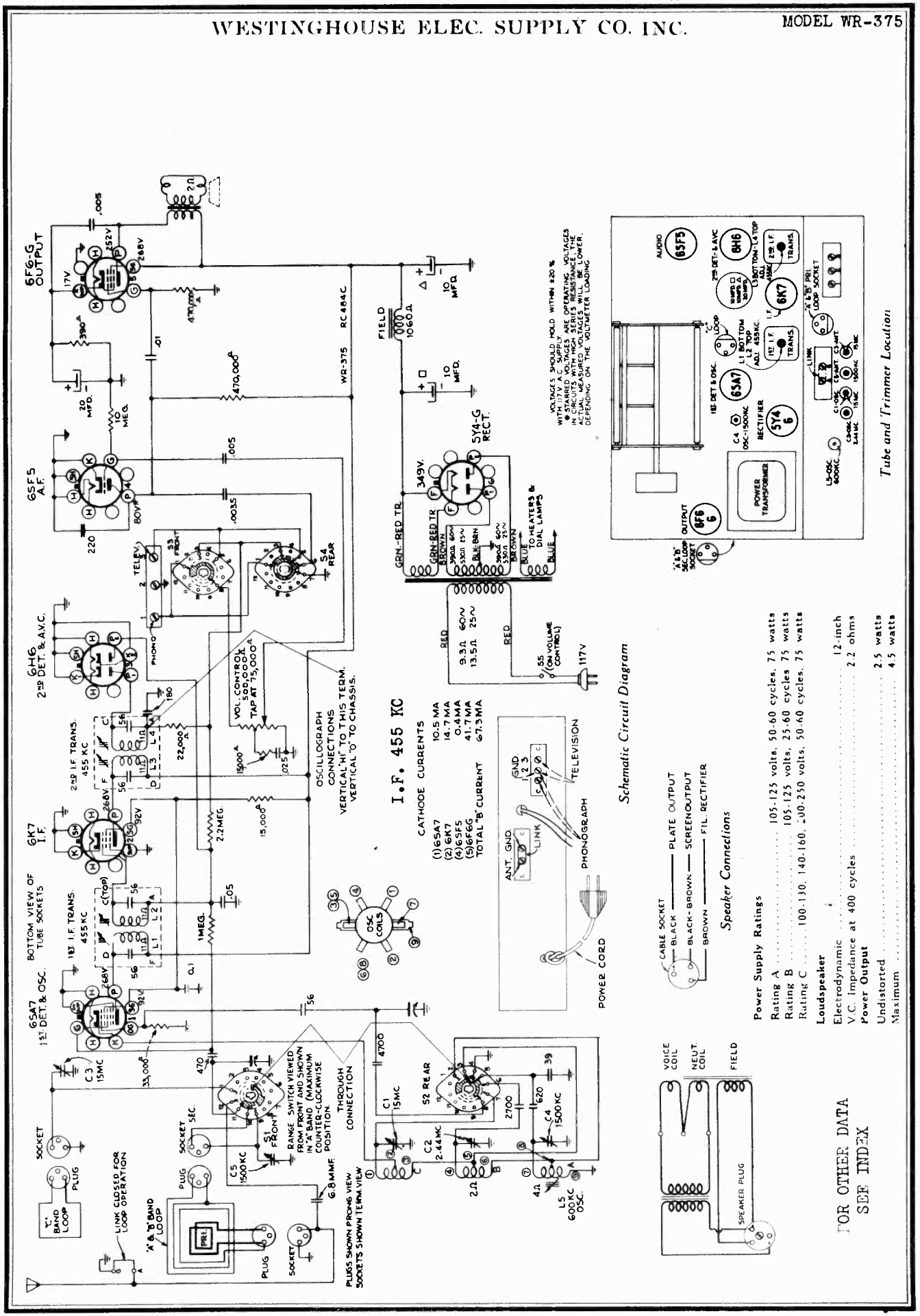
On the inner side of the tuning drum are two projections which serve as stops to prevent extreme rotation of the gang condenser. The tuning drum should be set so that the stop limiting clockwise movement of the drum takes effect just as the gang condenser plates are becoming fully meshed, thus preventing stress on the gang due to extreme rotation.

Pointer for Calibration Scale.—Improvise a pointer for the calibration scale by fastening a piece of wire to the chassis, and bend the wire so that it points to the 0° mark on the calibration scale when the plates are fully meshed.

Dial-Indicator Adjustment.—After fastening the chassis in the cabinet, attach the dial indicator to the drive cable with indicator set ⅛ inch to the left of the 540 kc mark, and gang condenser fully meshed. The indicator has a spring clip for attachment to the cable.

WESTINGHOUSE ELEC. SUPPLY CO. INC.

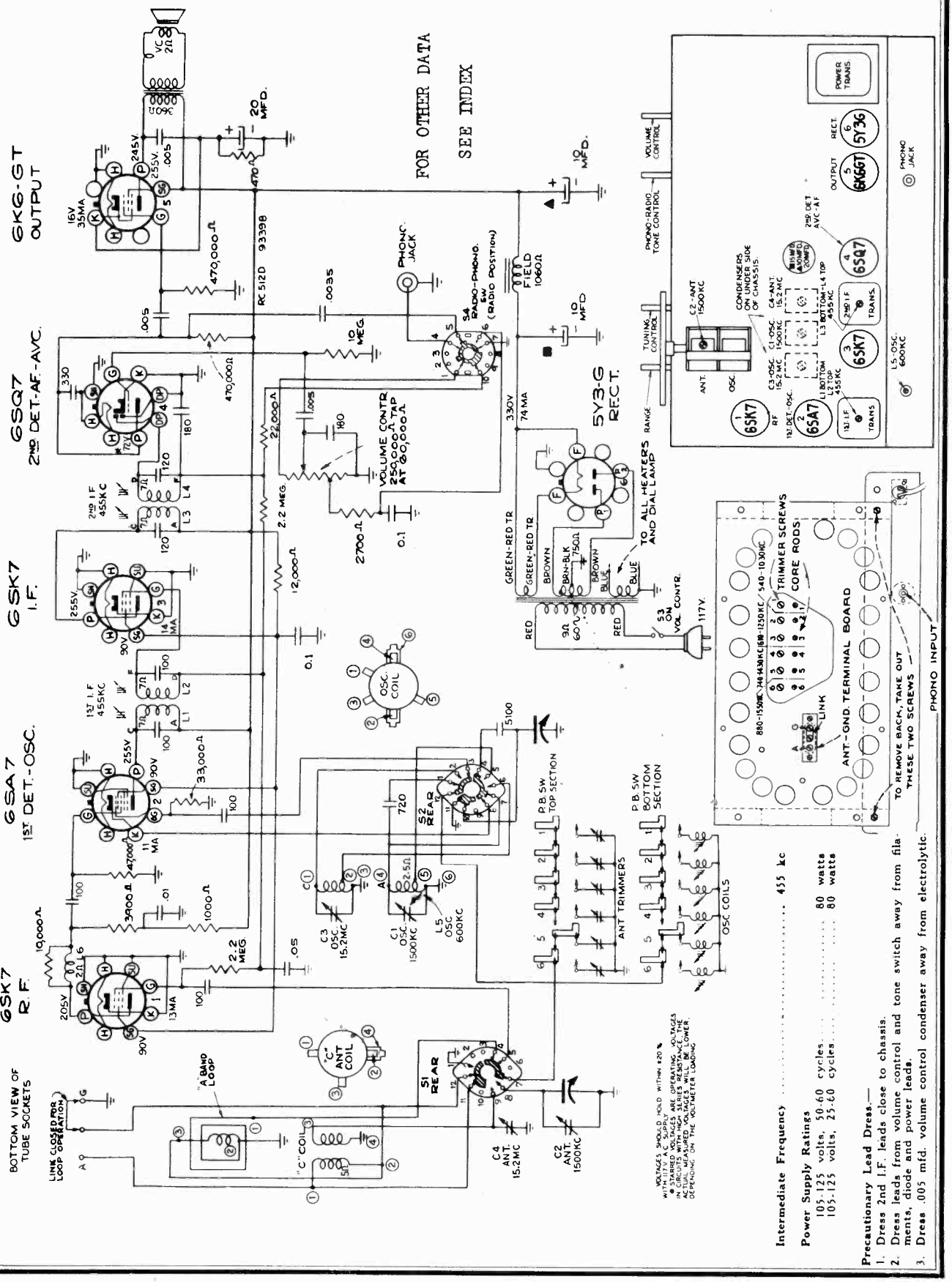
MODEL WR-375



FOR OTHER DATA SEE INDEX

MODEL WR-386

WESTINGHOUSE ELEC. SUPPLY CO. INC.



Intermediate Frequency ..... 455 kc

Power Supply Ratings

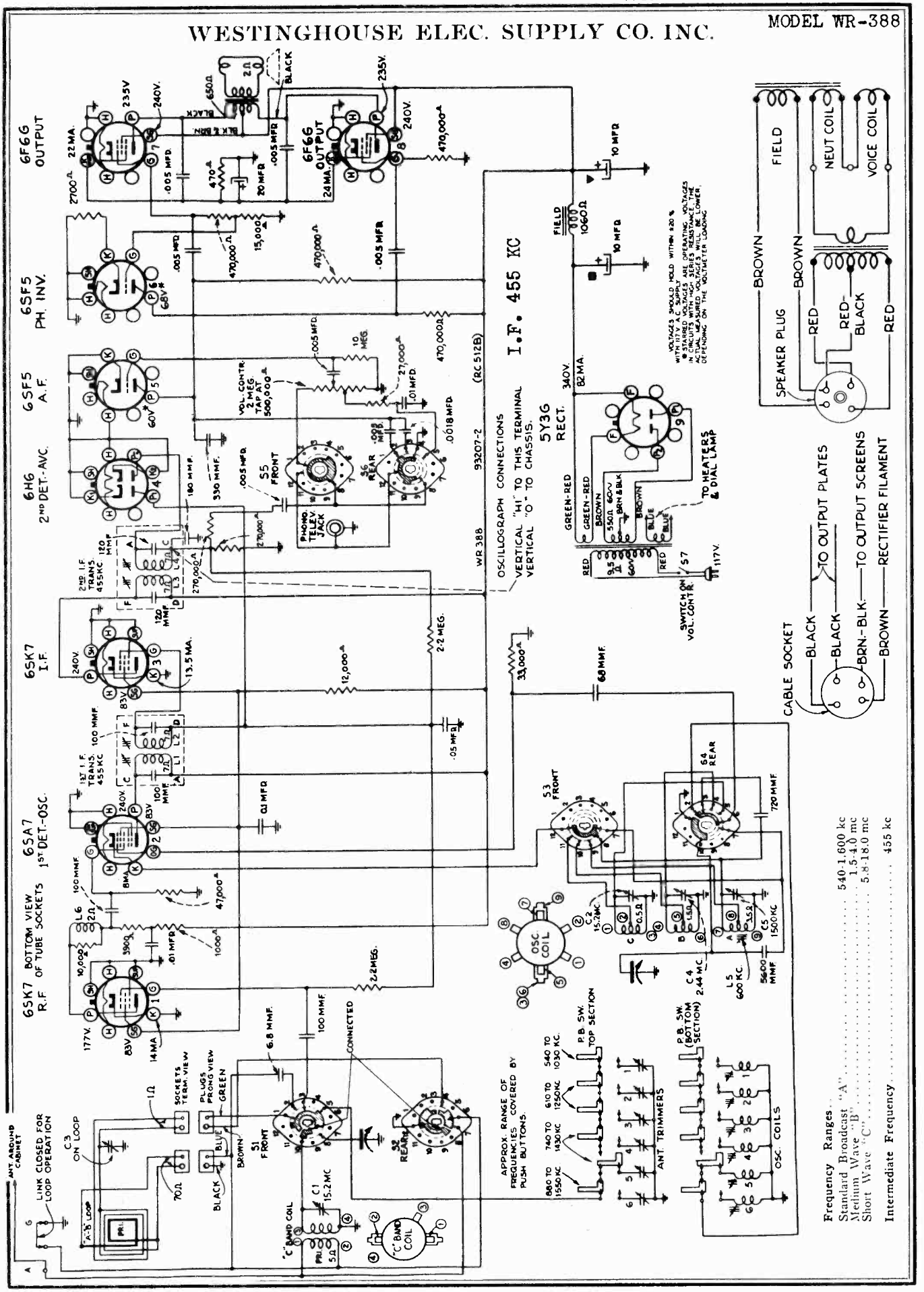
105-125 volts, 50-60 cycles ..... 80 watts
105-125 volts, 25-60 cycles ..... 80 watts

Precautionary Lead Dress.—

1. Dress 2nd I.F. leads close to chassis.
2. Dress leads from volume control and tone switch away from filaments, diode and power leads.
3. Dress .005 mfd. volume control condenser away from electrolytic.

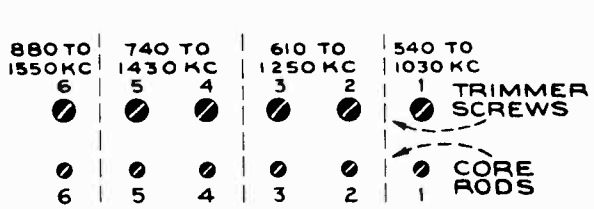
WESTINGHOUSE ELEC. SUPPLY CO. INC.

MODEL WR-388



MODEL WR-388

WESTINGHOUSE ELEC. SUPPLY CO. INC.



Push Button Adjustments

Calibration Scale on Indicator-Drive-Cord Drum.—The tuning dial is fastened in the cabinet and cannot be used for reference during alignment, therefore a calibration scale is attached to the indicator-drive-cord drum which is mounted on the shaft of the gang condenser. The setting of the gang condenser is read on this scale, which is calibrated in degrees. The correct setting of the gang in degrees, for each alignment frequency, is given in the alignment table.

As the first step in r-f alignment, check the position of the drum. The "90°" mark on the drum scale must be vertical, and directly under the center of the gang-condenser shaft when the plates are fully meshed. The drum is held to the shaft by means of two set screws, which must be tightened securely when the drum is in the correct position.

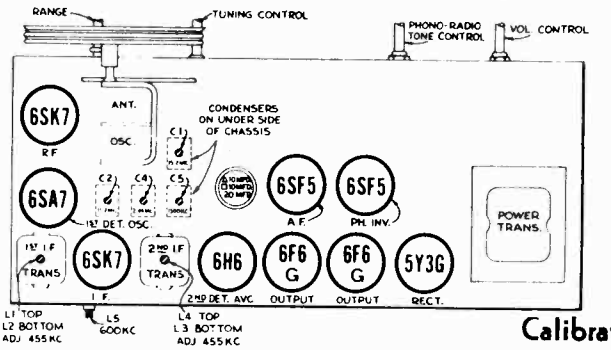
To determine the corresponding frequency for any setting of the calibration scales, refer to the accompanying drawing which shows the dial with 0-180° calibration scales drawn at top and bottom.

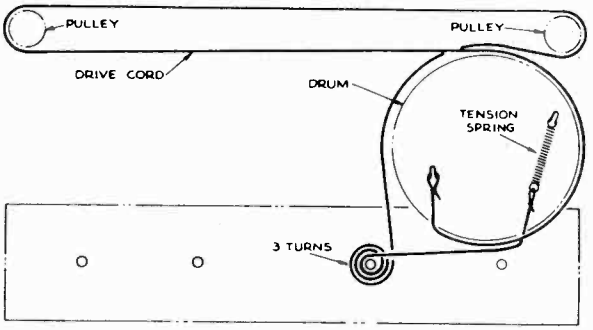
Pointer for Calibration Scale.—Improvise a pointer for the calibration scale by fastening a piece of wire to the gang-condenser frame, and bend the wire so that it points to the "0" mark on the calibration scale when the plates are fully meshed.

Dial-Indicator Adjustment.—After fastening the chassis in the cabinet, attach the dial indicator to the drive cable with indicator at the 540 kc mark, and gang condenser fully meshed. The indicator has a spring clip for attachment to the cable.

Precautionary Lead Dress.—

1. Dress 2nd I.F leads close to chassis.
2. Dress leads from volume control and tone switch away from filaments, diode and power leads.
3. Dress .005 mfd. volume control condenser away from electrolytic.



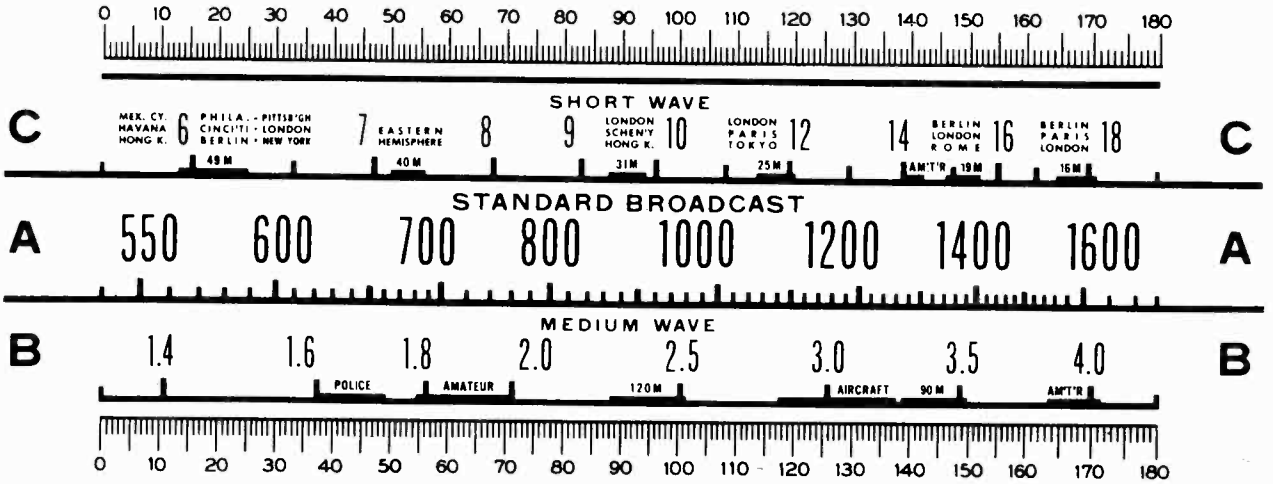


Arrangement of Drive Cord for Condenser and Dial Indicator

Steps	Connect the high side of test-osc. to—	Tune test-osc. to—	Range switch	Turn radio dial to—	Adjust the following for max. peak output
1	6SK7 I-F grid in series with .01 mfd.	455 kc	"A"	Quiet Point near 180°	L3 and L4 (2nd I-F Trans.)
2	6SA7 1st Detector in series with .01 mfd.				L1 and L2 (1st I-F Trans.)
3	Ant. terminal "A" in series with 47 mmf.	15.2 mc	"C"	148.5°	C1 (ant.) C2 (osc.)*
4	Ant. section of gang condenser in series with 300 ohms	2.44 mc	"B"	97°	C4 (osc.)*
5		1,500 kc	"A"	160°	C5 (osc.)*
6		600 kc		30°	L5 (osc.) (Rock gang)
7	Fasten chassis in cabinet. Connect loop, see that link is closed on the antenna board, attach dial indicator to drive cord, with indicator at 540 kc mark and gang at maximum capacity.				
8	Radiation loop consisting of two turns of wire 18 in. in diameter located 4 to 6 feet from receiver	1,500 kc	"A"	1,500 kc	C3 (ant.) (on loop)
9		600 kc		600 kc	L5 (osc.) (Rock gang)
10		Repeat steps 8 and 9			

*Use minimum capacity peak if two peaks can be obtained.
Note: Oscillator tracks above signal on all bands.

Calibration Scale

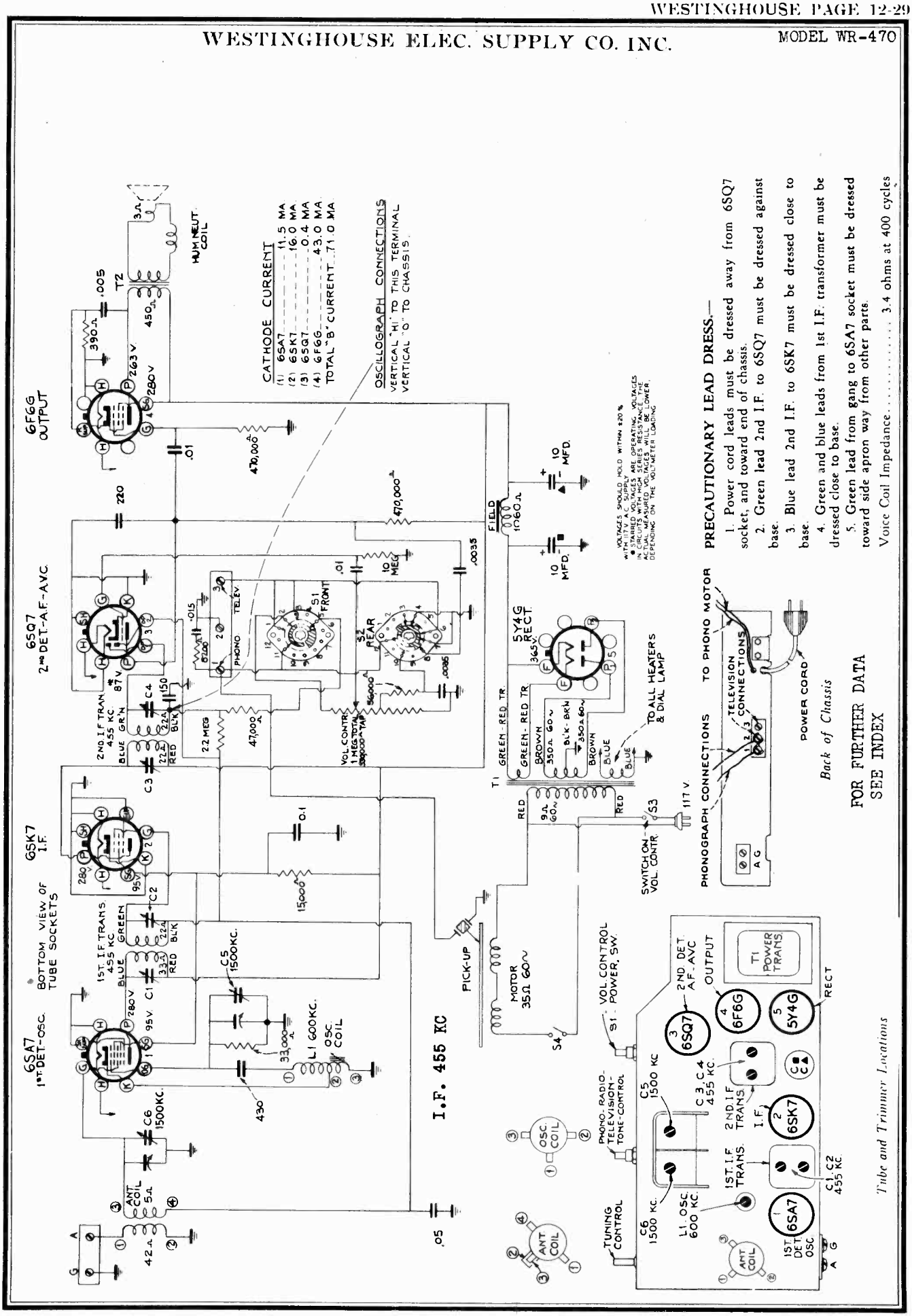


Receiver Dial Scales, and Corresponding 0-180° Calibration Scales

The corresponding position of the dial indicator for any setting of the calibration scale can be determined by drawing a line from this point on the bottom calibration scale to the same point on the top calibration scale. For example, 30° on the calibration scale corresponds to 600 kc on "A" band. Read instructions under "Alignment Procedure."

WESTINGHOUSE ELEC. SUPPLY CO. INC.

MODEL WR-470



PRECAUTIONARY LEAD DRESS.—

1. Power cord leads must be dressed away from 6SQ7 socket, and toward end of chassis.
2. Green lead 2nd I.F. to 6SQ7 must be dressed against base.
3. Blue lead 2nd I.F. to 6SK7 must be dressed close to base.
4. Green and blue leads from 1st I.F. transformer must be dressed close to base.
5. Green lead from gang to 6SA7 socket must be dressed toward side apron way from other parts.

Voice Coil Impedance..... 3.4 ohms at 400 cycles

FOR FURTHER DATA SEE INDEX

Tube and Trimmer Locations

MODELS WR-473
WR-474
WR-474L

WESTINGHOUSE ELEC. SUPPLY CO. INC.

AUTOMATIC RECORD CHANGER

Before servicing the automatic record changer, inspect the assembly to see that all levers, parts, gears, springs, etc. are in good order and are correctly assembled.

A bind or jam in the mechanism can usually be relieved by rotating the turntable in the reverse direction.

The changer can be conveniently rotated through its change cycle by pushing the index lever to "Reject" and revolving the turntable by hand. Six turntable revolutions are required for one change cycle.

If the record changer or cabinet is not perfectly level, normal operation is likely to be affected.

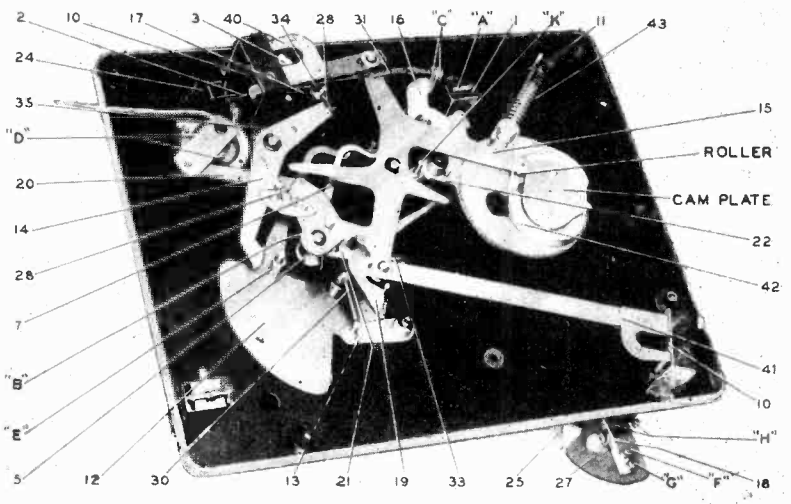
The 10 and 12 inch records must be absolutely flat for smooth operation when using a mixture of the two sizes.

A shorting switch, located in the pickup head, operates due to pressure when the pickup is placed on the pickup rest.

ADJUSTMENTS

A. Main Lever.—This lever is basically important in that it interlinks the various individual mechanisms which control needle landing, tripping, record separation, etc. One adjustment is provided for the main lever. Rotate the turntable until the changer is out-of-cycle; and adjust rubber bumper bracket (A) so that the roller clears the nose of the cam plate by 1/16 inch.

B. Friction Clutch.—The motion of the tone arm toward the center of the record is transmitted to the trip pawl "22" by the trip lever "7" through a friction clutch "5." If the motion of the pickup is abruptly accelerated or becomes irregular due to swinging in the eccentric groove, the trip finger "7" moves the trip pawl "22" into engagement with the pawl on the main gear, and the change cycle is started. Proper adjustment of the friction clutch "5" occurs when movement of the tone arm causes positive movement of the trip pawl "22" without tendency of the clutch to slip. The friction should be just enough to prevent slippage, and is adjustable by means of screw "B." If adjustment is too tight, the needle will repeat grooves; if too loose, tripping will not occur at the end of the record.



NOTE: Numbers refer to parts—letters refer to adjustments

C. Pickup Lift Cable Screw.—During the record change cycle, lever "16" is actuated by the main lever "15" so as to raise the tone arm clear of the record by means of the pickup lift cable. To adjust pickup for proper elevation, stop the changer "in-cycle" at the point where pickup is raised to the maximum height above turntable plate, and has not moved outward; at this point adjust locknuts "C" to obtain 1 inch spacing between needle point and turntable top surface.

D. & E. Needle Landing on Record.—The relation of coupling between the tone arm vertical shaft and lever "20" determines the landing position of the needle on a 10 inch record. Position of eccentric stud "E" governs the landing of the needle on a 12 inch record; this, however, is dependent on the proper 10 inch adjustment.

To adjust for needle landing, place 10 inch record on turntable; push index lever to reject position and return to the 10 inch position; see that pickup locating lever "17" is tilted fully toward turntable; rotate mechanism through cycle until needle is just ready to land on the record; then see that pin "V" on lever "14" is in contact with "Step T" on lever "17." The correct point of landing is 4-11/16 inches from the nearest side of the turntable spindle; loosen the two screws "D" and adjust horizontal position of tone arm to proper dimension, being careful not to disturb levers "14" and "17." Leave approximately 1/32 inch end play between hub of lever "20" and pickup base bearing, and tighten the blunt nose screw "D"; run mechanism through several cycles as a check, then tighten cone pointed screw "D."

After adjusting for needle landing on a 10 inch record, place 12 inch record on turntable; push index lever to reject and return to 12 inch position; rotate mechanism through cycle until needle is just ready to land on the record; the correct point of landing is 5-11/16 inches from nearest side of spindle. If the landing is incorrect, turn stud "E" until the eccentric end adjusts lever "14" to give correct needle landing. The eccentric end of the stud must always be toward the rear of the motor board, otherwise incorrect landing may occur with 10 inch records.

F. & G. Record Separating Knife.—The upper plate (knife) "25" on each of the record posts serves to separate the lower record from the stack and to support the remaining records during the change cycle. It is essential that the spacing between the knife and the rotating record shelf "27" be accurately maintained. The spacing for the 10 inch record is nominally .058 inch, and for the 12 inch record is .075 inch.

To adjust, rotate the knife to the point of minimum vertical separation from the record shelf and turn screw and locknut "F" to give .055—.061 inch separation. Screw "G" must not be depressed during this adjustment. After setting screw "F" adjust screw "G" so that when its tip is depressed flush with top of record shelf, the vertical spacing between the knife, in its lowest rotational position, and the shelf, is .072—.078 inch.

H. Record Support Shelf.—The record shelf revolves during the change cycle to allow the lower record to drop onto the turntable. Both posts are rotated simultaneously by a gear and rack coupled to the main lever "15," and it is necessary that adjustment be such that the record is released from both shelves at the same instant. To adjust, place a 12 inch record on the turntable, rotate mechanism into cycle to the point where tone arm is at maximum distance outward from turntable; lift record upward until it is in contact with both separating knives, then loosen screws "H" and shift record shelves so that the curved inner edges of the shelves are uniformly spaced at least 1/16 inch from record edge. Tighten the blunt nose screw "H," run mechanism through cycle several times to check action, then tighten cone pointed screw "H."

If record shelves or knives are bent, or not perfectly horizontal, improper operation and jamming of mechanism will occur.

J. Tone Arm Rest Support (not shown).—When the changer is out-of-cycle, the front lower edge of the pickup head should be 5/16 inch above surface of motor board. This may be adjusted by bending the tone arm support bracket, which is associated with the tone arm mounting base, in the required direction.

K. Trip Pawl Stop Pin.—The position of the trip pawl stop pin "K" in relation to the main lever "15" governs the point at which the roller enters the cam. By bending the pin support either toward or away from trip pawl bearing stud, the roller can be made to enter the cam later or earlier, respectively. This adjustment should be made so that the roller definitely clears the cam outer guide as well as the nose of the cam plate.

Lubrication.—Petrolatum or petroleum jelly should be applied to cam, main gear, spindle pinion gear, and gears of record posts.

Light machine oil should be used in the tone arm vertical bearing, record post bearings, and all other bearings of various levers on underside of motor board.

Apply a few drops of light machine oil to the motor spindle bearing and oil hole adjacent to the spindle bearing. The oil hole has a screw plug.

Do not allow oil or grease to come in contact with, rubber mounting of tone arm base, rubber bumper, or rubber spindle cap.

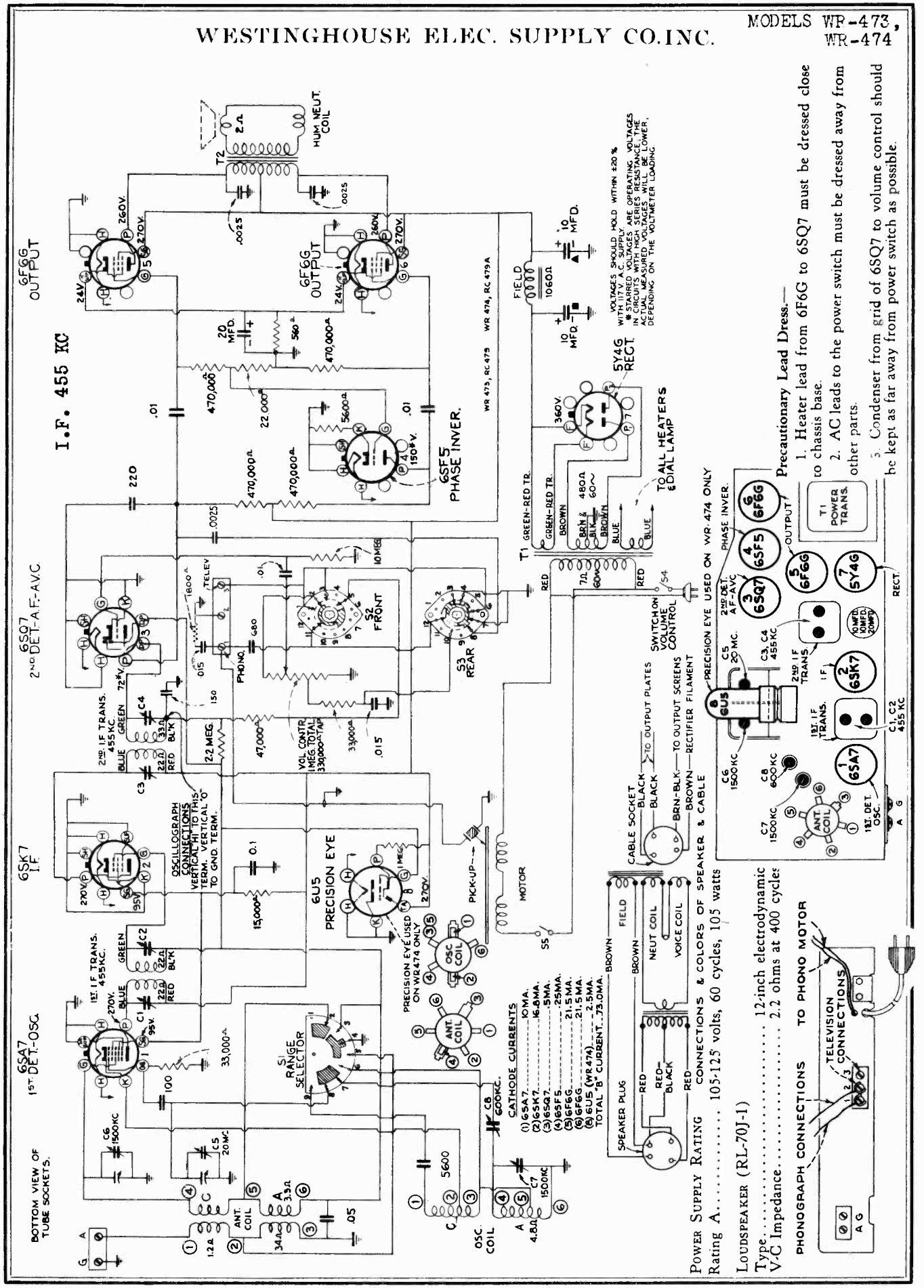
MISCELLANEOUS SERVICE HINTS

Incorrect adjustment of a particular mechanism of the changer is generally exhibited in a specific mode of improper operation. The following relations between effects on operation and the usual misadjustments will enable ready adjustment in most cases.

1. For any irregularity of operation, the adjustment of the main lever "15" should be checked first as in "A."
2. Needle does not land properly on both 10 and 12 inch records—Make complete adjustments "D" and "E."
3. Needle does not land properly on 12 inch record but correct on 10 inch—Effect adjustment "E."
4. Failure to trip at end of record—Increase clutch "5" friction by means of screw "B." Also, see that levers "7" and "12" are free to move without touching each other.
5. Pickup strikes lower record of stack or drags across top record on turntable—Adjust lift cable per adjustment "C."
6. Needle does not track after landing—Friction clutch "5" adjustment "B" may be too tight; bind in tone arm vertical bearing; levers "7" and "12" fouled; or pickup output cable twisted.
7. Cycle commences before record is complete—Record is defective, or adjustment "B" of friction clutch "5" is too tight.
8. Wow in record reproduction—Record is defective; or instrument is not being operated at normal room temperature (65° F).
9. Record knives strike edge of records—Records warped; record edges are rough; or knife adjustments "F" and "G" are incorrect.
10. Record not released properly—Adjust record shelf assemblies in respect to shaft by means of adjustment "H."
11. Needle lands in 10 inch position on 12 inch record or misses record when playing both types mixed—Increase tension of pickup locating lever spring "34."

WESTINGHOUSE ELEC. SUPPLY CO. INC.

MODELS WR-473, WR-474



Precautionary Lead Dress.—

1. Heater lead from 6F6G to 6SQ7 must be dressed close to chassis base.
2. AC leads to the power switch must be dressed away from other parts.
3. Condenser from grid of 6SQ7 to volume control should be kept as far away from power switch as possible.

Power Supply Rating ..... 105-125 volts, 60 cycles, 105 watts

Loudspeaker (RL-70J-1)

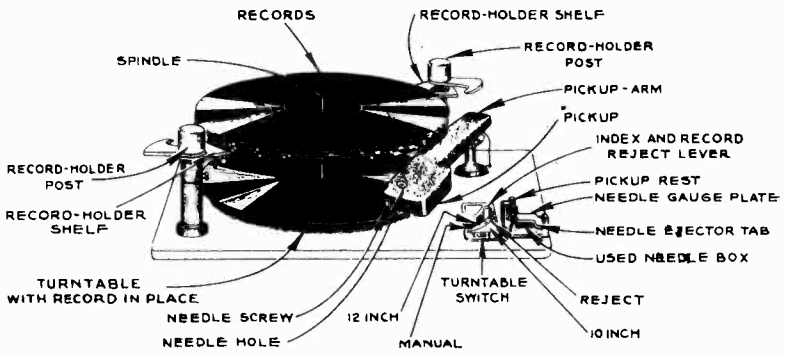
Type ..... 12-inch electrodynamic

V-C Impedance ..... 2.2 ohms at 400 cycles

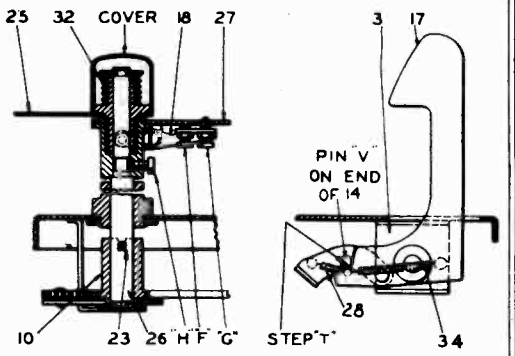
MODELS WR-473, WR-474
MODELS WR-172, WR-470, WR-373Y,

WESTINGHOUSE ELEC. SUPPLY CO. INC.

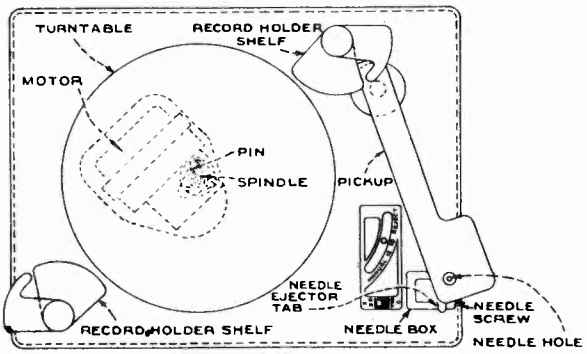
Automatic Record Changer



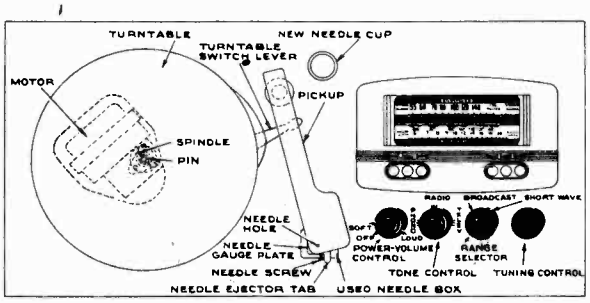
Top View of Automatic Record Changer



Details of Record Shelf Posts, and Locating Lever Assemblies



Motorboard and Controls WR-474



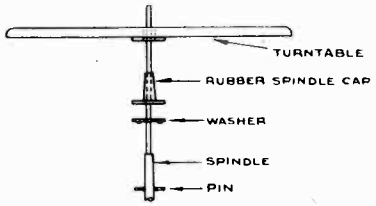
Controls, WR-473

The crystal pickup is sealed in a metal case as protection against extreme changes of climate. If failure occurs, do not attempt to repair the unit, but install a new crystal unit.

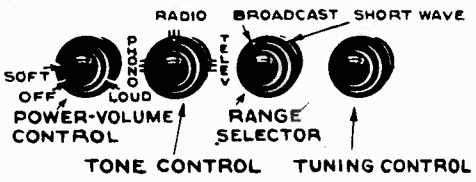
The phonograph motor is a self-starting constant-speed induction type.

Motor Lubrication.—Apply a few drops of light machine oil to the spindle bearing and oil hole every six months. The oil hole is located in the motor casting, adjacent to the spindle bearing, and on Model WR-474 is covered with a screw plug.

The automatic stop (Model WR-473) should be adjusted so that the lever will snap to the "off" position when the pickup needle is 1¾ inches from the center line of the spindle.



Turntable Assembly (All Models)



Controls, WR-474

Adjustments for Push-Button Tuning

MODELS WR-172, WR-373Y, WR-470, WR-473, WR-474

The push-buttons should be adjusted for six favorite stations after the receiver has been operating for a brief warm-up period. Each button may be set up to any standard broadcast station. The preferable arrangement is to adjust for stations in the order of frequency, from low to high. Proceed as follows:

1. Loosen the push-buttons by turning counter-clockwise about one turn from their tight position so they turn freely.

2. Check to be sure the Phono-Radio switch is in "Radio" position.

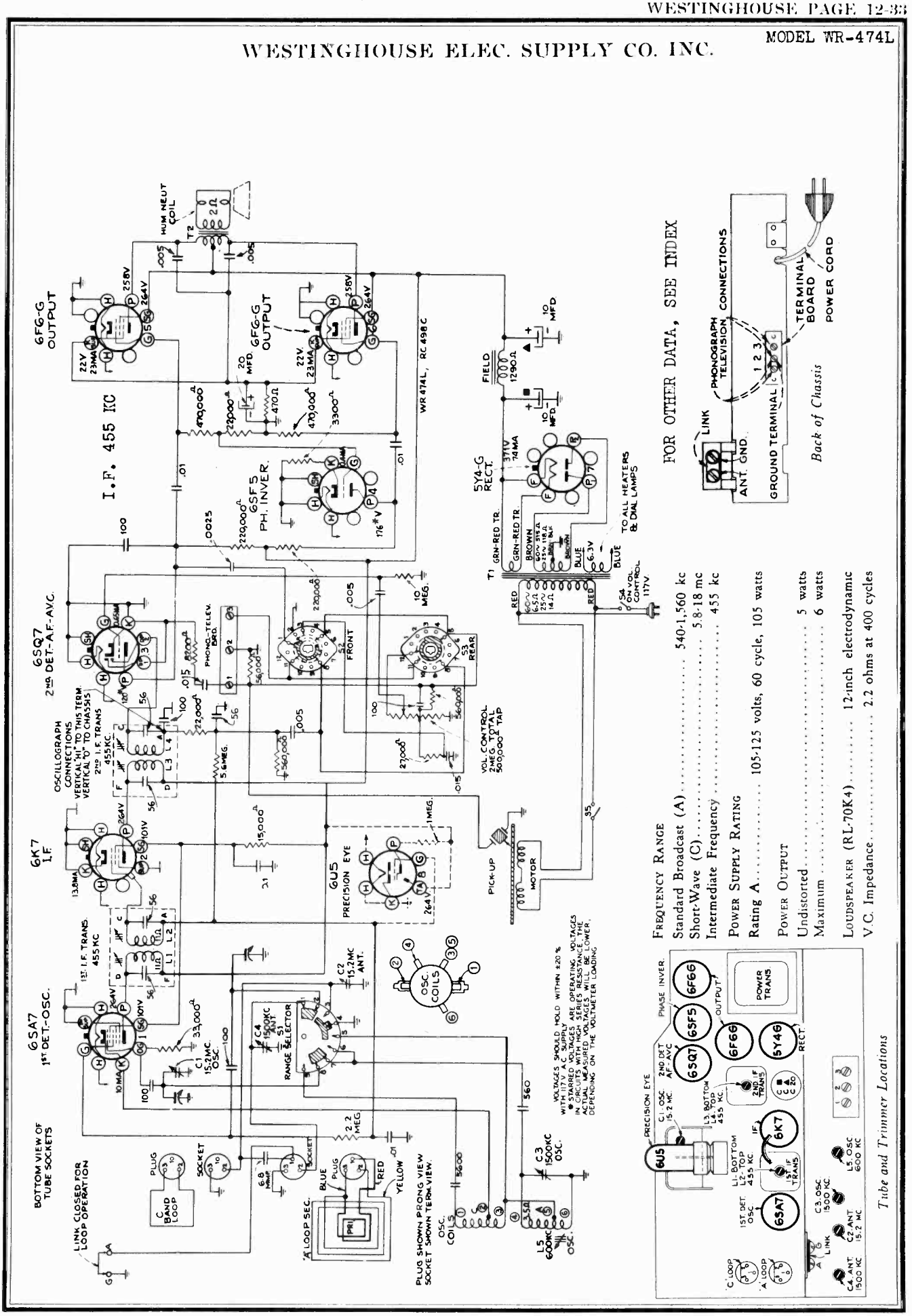
3. Press in push-button No. 1 (left) as far as it will go without undue pressure, hold in, retune station with manual control if necessary for best reception, and then carefully tighten up the button. Do not tighten more than ¼ turn after the screw begins to grip or damage to the mechanism may result.

4. Proceed in a similar manner for the remainder of the push-buttons.

5. Insert the station marker tabs in the recesses above the push-buttons.

WESTINGHOUSE ELEC. SUPPLY CO. INC.

MODEL WR-474L



Frequency Range

Standard Broadcast (A)	540-1,560 kc
Short-Wave (C)	5.8-18 mc
Intermediate Frequency	455 kc

Power Supply Rating

Rating A	105-125 volts, 60 cycle, 105 watts

Power Output

Undistorted	5 watts
Maximum	6 watts

Loudspeaker (RL-70K4) ..... 12-inch electrodynamic

V.C. Impedance ..... 2.2 ohms at 400 cycles

Alignment Procedure

Before proceeding with alignment the following lead dress should be carefully checked.

1. Dress AC switch leads away from 6SQ7 tube socket.

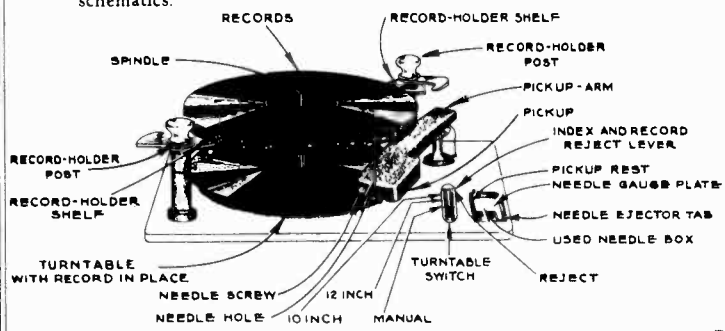
2. Do not twist loop leads together or around each other. Spacing between leads from "C" band loop to chassis is important—see alignment step "5" below.

3. "High side" leads from loop sockets, range switch, oscillator coil, and trimmers must be dressed away from chassis and each other.

4. Dress the two 100 mmf. condensers going to the grid and osc. grid of the 6SA7 tube away from each other.

5. Dress the .01 mfd. 6F6-G grid condenser away from power switch.

Cathode-Ray Alignment is the preferable method. Connections for the oscillograph are shown on the chassis schematics.



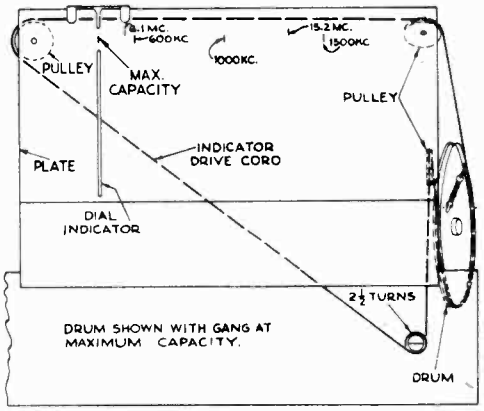
Top View of Automatic Record Changer

Output Meter Alignment.—If this method is used, connect the output meter across the voice coil, and turn the receiver volume control to maximum.

Test Oscillator.—For all alignment operations, keep the oscillator output as low as possible to avoid a-v-c action.

Calibration Marks. — The tuning dial is fastened in the cabinet and can not be used for reference during alignment. Therefore, calibration marks have been stamped in the plate on the front of the chassis as shown in the accompanying drawing. These marks are used for reference during alignment.

Dial Indicator Adjustment.—With the gang condenser in full mesh, the indicator should point to the extreme left (low frequency) mark on the dial scale.



Dial-Indicator and Drive Mechanism

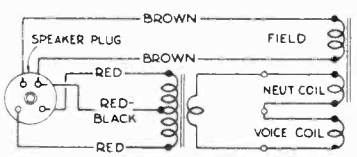
Refer to "Alignment Procedure" for explanation of the "calibration marks" shown in this drawing.

Steps	Connect test-osc. output to—	Tune test-osc. to—	Turn radio dial to—	Adjust the following for maximum peak output
1	I-F grid through 0.1 mfd. capacitor and ground	455 kc	"C" band Quiet point	L-3 and L-4 (2nd I-F trans.)
2	1st det. grid through 0.1 mfd. capacitor and ground			L-1 and L-2 (1st I-F trans.)
3		15.2 mc	15.2 mc	C-1 oscillator*
4	Radiation loop consisting of two turns of wire 18 inches in diameter located 4 to 6 feet from receiver	15.2 mc	Rock at 15.2 mc	C-2 antenna† while rocking
5		6.1 mc	6.1 mc	Spacing between leads from "C" band loop to chassis
6		15.2 mc	Rock at 15.2 mc	C-2 antenna† while rocking
7		1,500 kc	1,500 kc	C-4 antenna C-3 oscillator
8		600 kc	Rock at 600 kc	L-5 oscillator while rocking
9		1,500 kc	1,500 kc	C-4 antenna C-3 oscillator

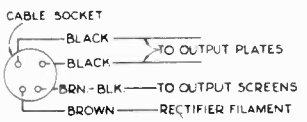
When making adjustments 4 to 9 inclusive the chassis must be in the cabinet, both loops connected, and all leads in their normal positions. When mounting chassis in cabinet if calibration marks on dial plate do not line up with dial scale mounted on cabinet move pointer to agree with dial scale on cabinet.

* Oscillator should track on high frequency side of signal. If two peaks are obtained use high frequency (minimum capacity) peak.

† If two peaks can be obtained use low frequency (maximum capacity) peak.

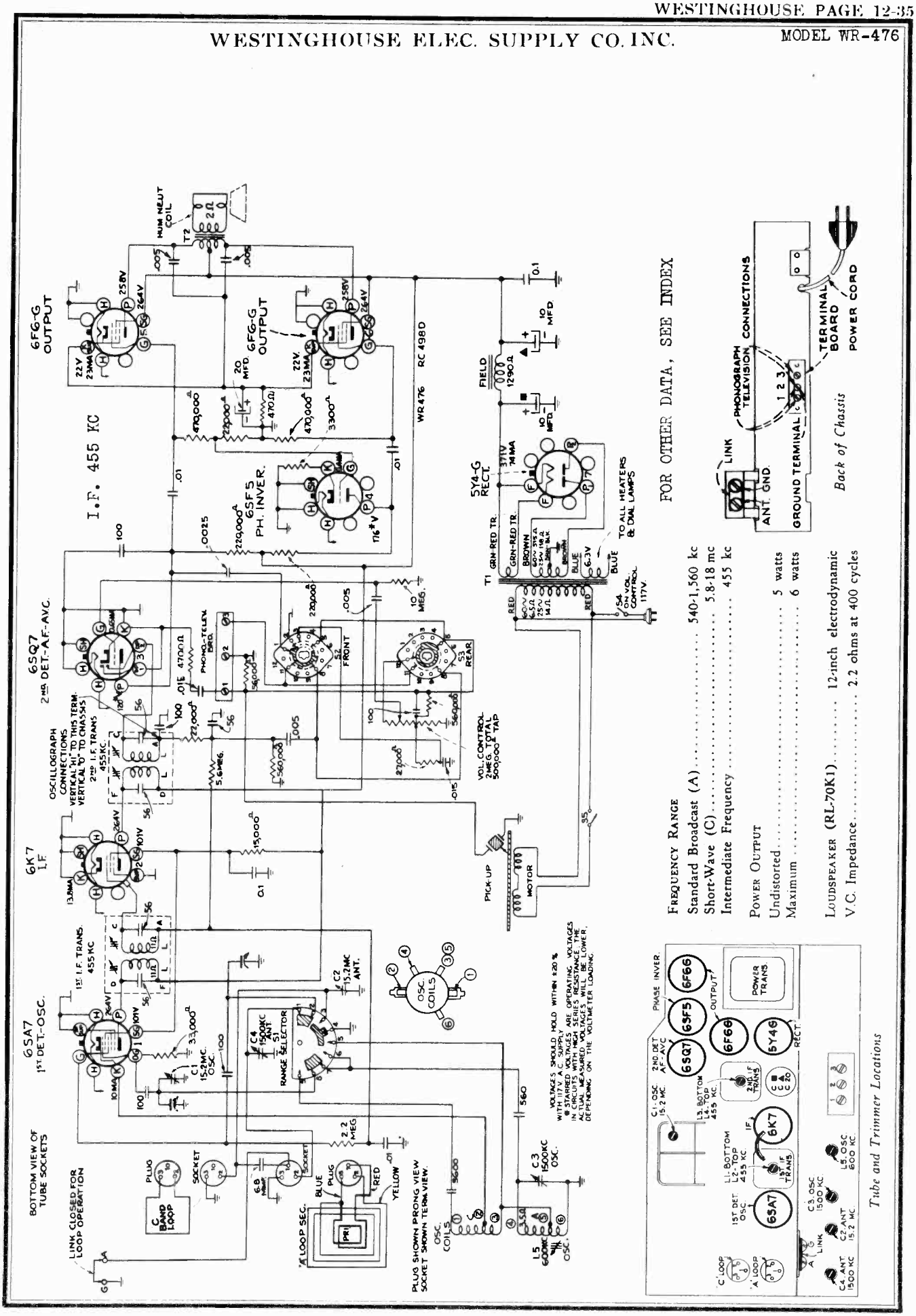


Speaker and Cable Connections



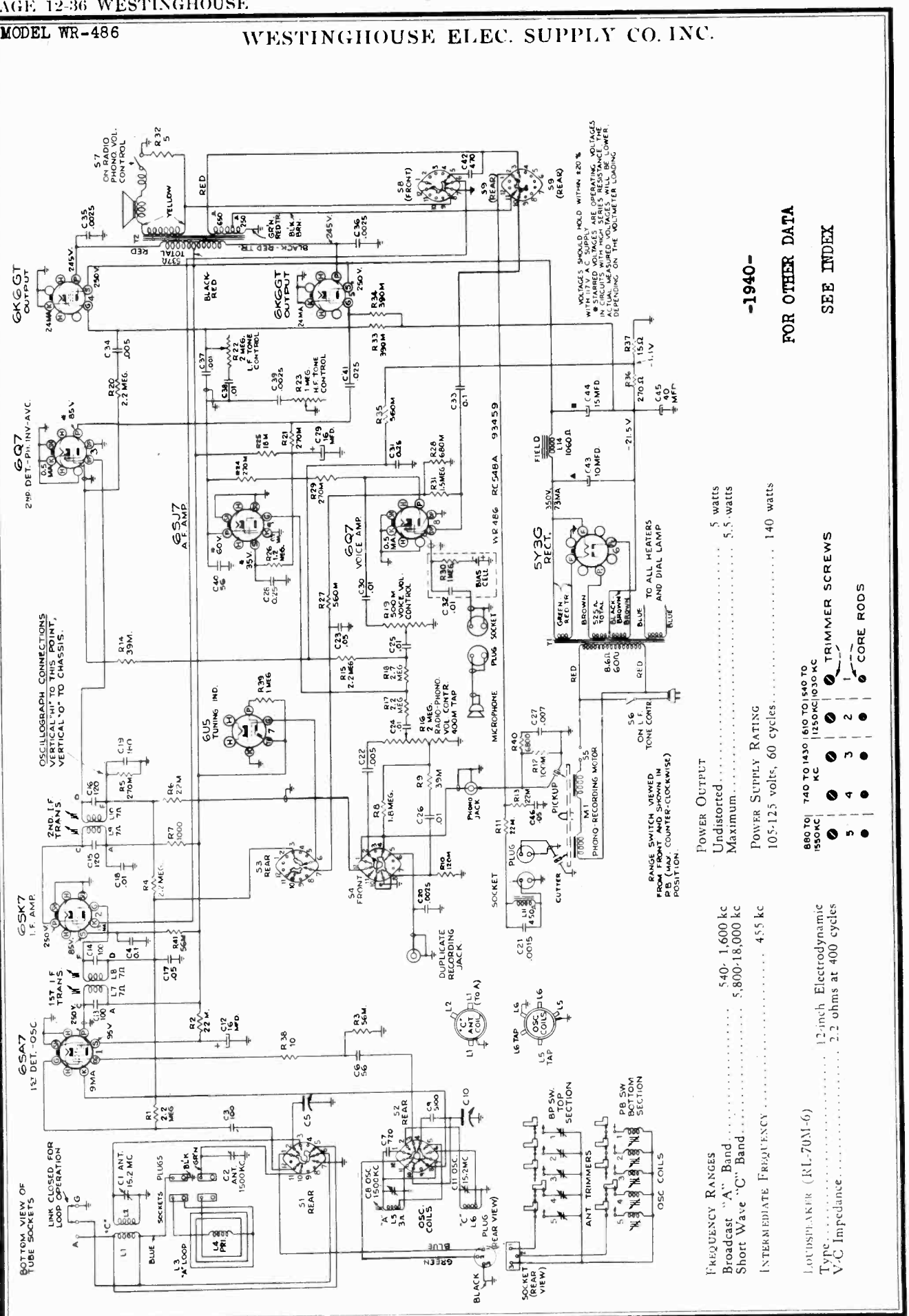
WESTINGHOUSE ELEC. SUPPLY CO. INC.

MODEL WR-476



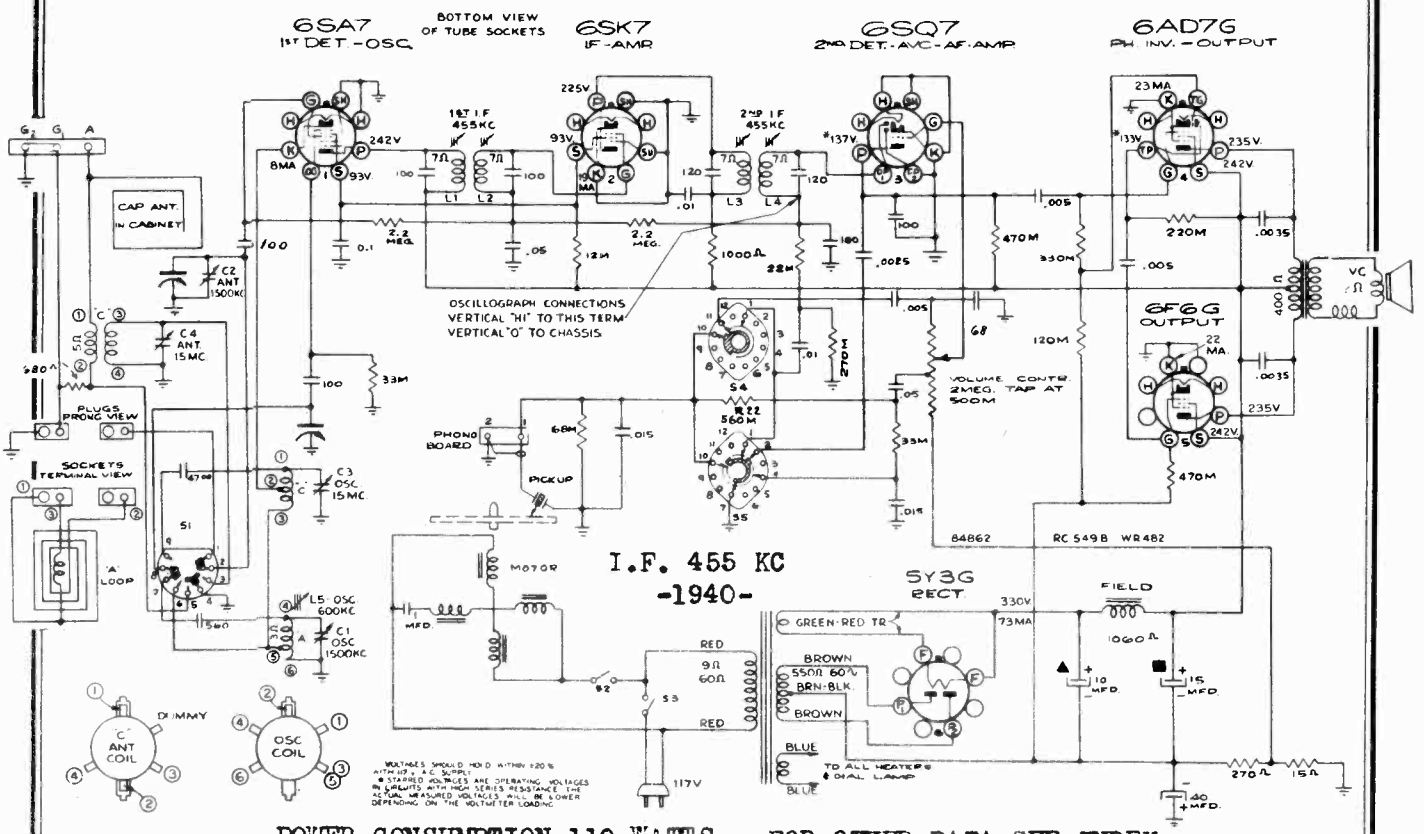
MODEL WR-486

WESTINGHOUSE ELEC. SUPPLY CO. INC.



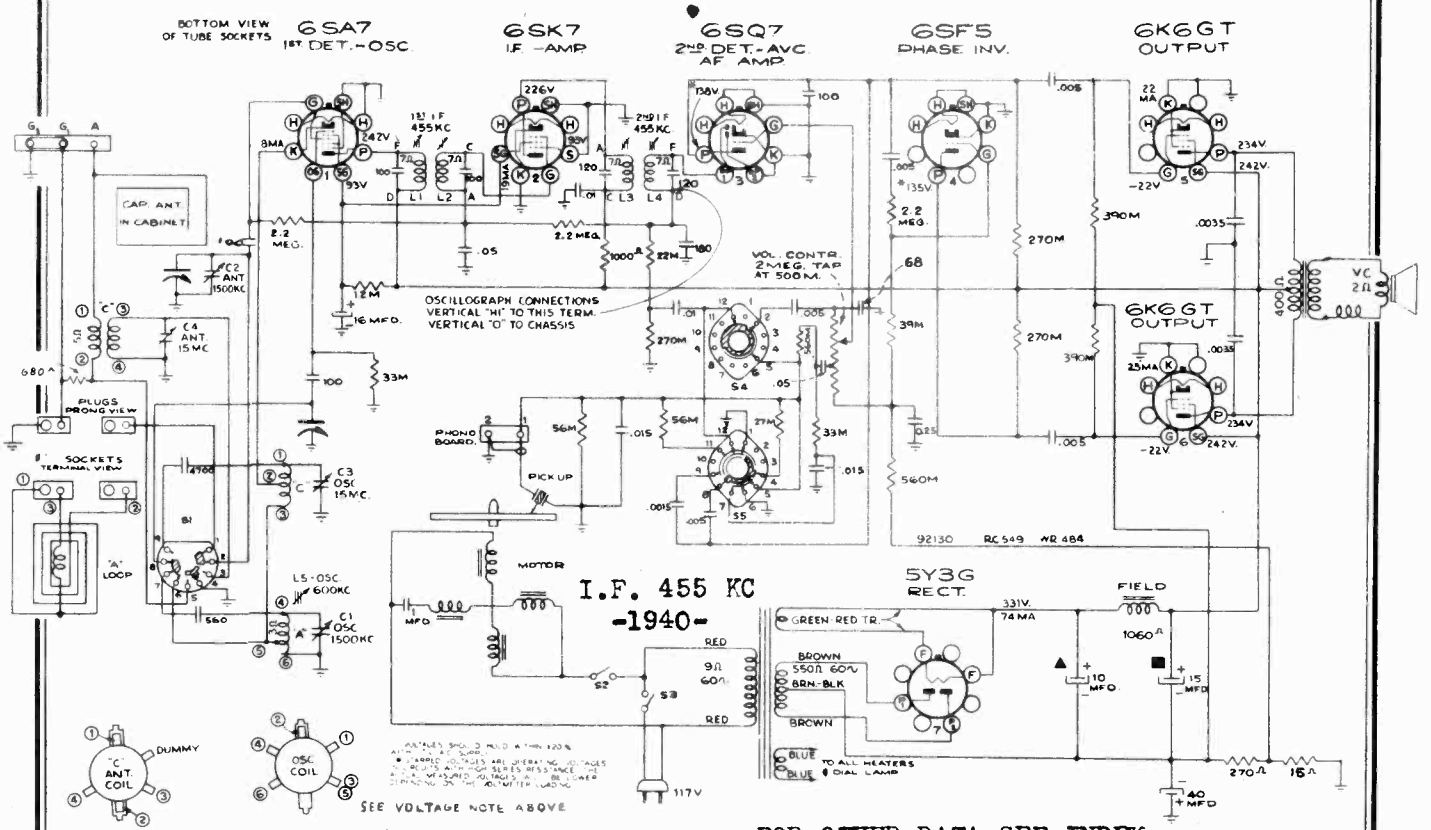
WESTINGHOUSE ELEC. SUPPLY CO. INC.

MODEL WR-482
MODEL WR-484



POWER CONSUMPTION 110 WATTS FOR OTHER DATA SEE INDEX

Schematic Circuit Diagram—Model WR-482



POWER CONSUMPTION 110 WATTS FOR OTHER DATA SEE INDEX

Schematic Circuit Diagram—Model WR-484

MODEL WR-482
MODEL WR-484

WESTINGHOUSE ELEC. SUPPLY CO. INC.

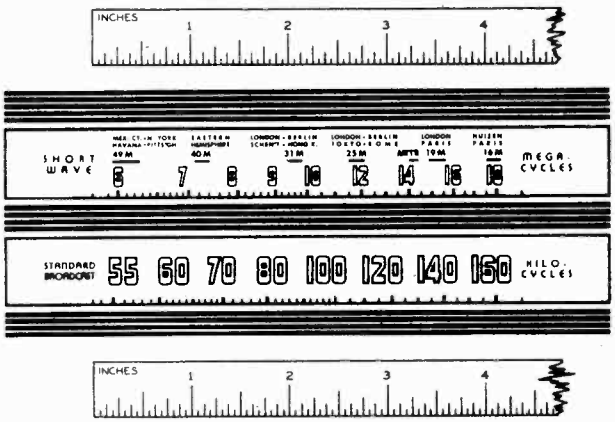
Alignment Procedure

Cathode-Ray Alignment is the preferable method. Connections for the oscillograph are shown in the schematic diagram.

Output Meter Alignment.—If this method is used, connect the meter across the voice coil, and turn the receiver volume control to maximum.

Test-Oscillator.—For all alignment operations, connect the low side of the test-oscillator to the receiver chassis, and keep the output as low as possible to avoid a-v-c action.

Calibration Scale.—The glass tuning dial may be easily removed from the cabinet and temporarily attached to the chassis for quick reference during alignment. In the event that only the chassis is returned for service, and the cabinet with its tuning dial is left in the customer's home, the calibration scale printed in this service note can be used in conjunction with an ordinary 12-inch ruler as an accurate and convenient substitute for the regular dial.



Calibration Scale

Each method is described below.

Using Tuning Dial.—

1. Slide out the flat spring clamp at each end of the dial, and remove the glass dial from the cabinet.

2. With gang in full mesh, move the dial pointer to the reference mark at the left-hand end of the dial backing plate.

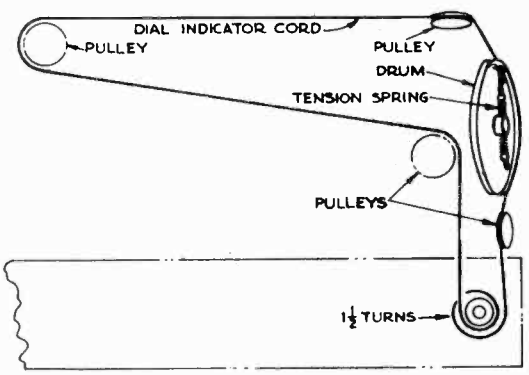
3. Place the glass dial under the pointer so that the extreme left scale graduations coincide with the pointer. Use scotch tape to hold the glass dial in this position.

Using Calibration Scale.—

1. With gang in full mesh, move the dial pointer to the reference mark at the left-hand end of the dial backing plate.

2. Place a flat 12-inch ruler on the dial backing plate so the left-end of ruler is at the reference mark at left-end of backing plate. Temporarily fasten the ruler with scotch tape to the backing plate.

3. Refer to calibration scale printed in this service note. This is a reduced reproduction of the dial with an inch-scale drawn at top and bottom. To find the correct pointer position in inches for any desired frequency, draw a vertical line through this frequency on the calibration scale.

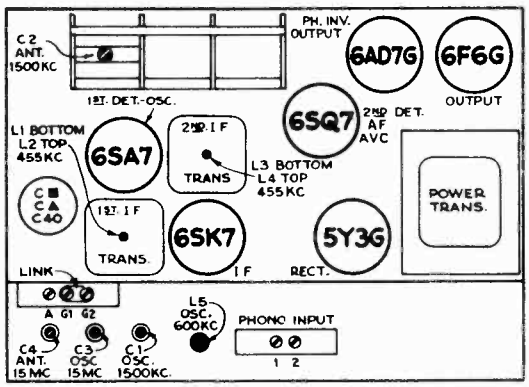


Dial Indicator and Drive Mechanism

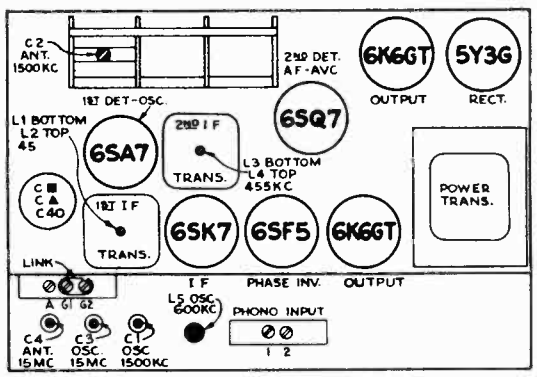
Dial-Pointer adjustment.—After the chassis is replaced in cabinet, move the dial pointer (if necessary) so that it is at the left-hand graduation on the dial with the gang in full mesh.

Steps	Connect the high side of the test-osc. to—	Tune test-osc. to—	Turn radio dial to—	Adjust the following for max. peak output
1	6SK7 grid in series with .01 mfd.	455 kc	"A" band Quiet point between 550-750 kc	L3 and L4 (2nd I-F trans.)
2	6SA7 grid in series with .01 mfd.			L1 and L2 (1st I-F trans.)
3	Ant. terminal (open link) in series with 200 mmfd.	1,500 kc	1,500 kc "A" band	C1 (osc.) C2 (ant.)
4		600 kc	600 kc "A" band	L5 (osc.) Rock gang
5	Ant. terminal (open link) in series with 47 mmfd.	15 mc	15 mc "C" band	C3 (osc.)* C4 (ant.) Rock gang

* Use minimum capacity peak if two peaks can be obtained.
The oscillator tracks above the signal frequency on all bands.
Note: C2 omitted on some production—adjust grid lead (6SA7) for resonance.



Tube and Trimmer Locations—Model WR-482



Tube and Trimmer Locations—Model WR-484

Adjustments for Push-Button Tuning

The push-buttons should be adjusted for six favorite stations after the receiver has been operating for a brief warm-up period. Each button may be set up to any standard broadcast station. The preferable arrangement is to adjust for stations in the order of frequency, from low to high. Proceed as follows:

1. Pull off the push-buttons and loosen the push-button screw with a small screwdriver.

2. Set the radio-phono switch to "radio" position and the range switch to "Broadcast" position, now accurately tune in the station for which the first button is to be set.

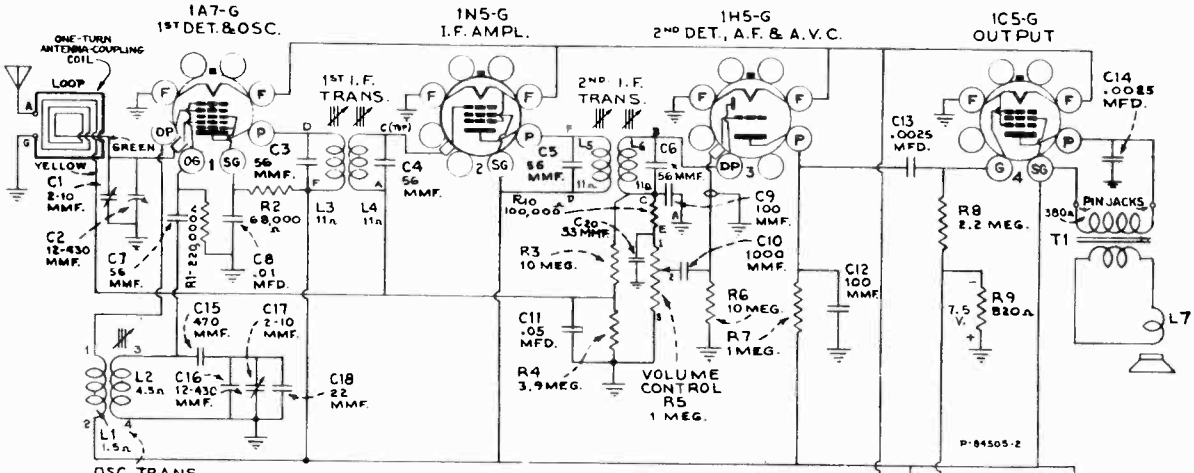
3. Press in push-button rod No. 1 as far as it will go without undue pressure, hold in, retune station with manual control if necessary for best reception, and then carefully tighten up the screw. Do not tighten more than ¼ turn after the screw begins to grip or damage to the mechanism may result.

4. Replace the push-button on its shaft.

5. Proceed in a similar manner for the remainder of the push-buttons.

6. Moisten and insert the station marker tabs in the recesses in the push-buttons.

WESTINGHOUSE ELEC. SUPPLY CO. INC. MODEL WR-674



POWER OUTPUT

Undistorted	0.10 watt
Maximum	0.21 watt

LOUDSPEAKER

Type	5-inch permanent-magnet dynamic
Voice-coil Impedance	2.2 ohms at 400 cycles

BATTERIES REQUIRED

"A," one 1.5 volt dry plug-type "A," 2½-in. x 2½-in. x 4-in. (Eveready No. 742 or equivalent)

"B," two 45 volt dry plug-type "B," 2½-in. x 4-in. x 5¼-in. (Eveready No. 732 or equivalent)

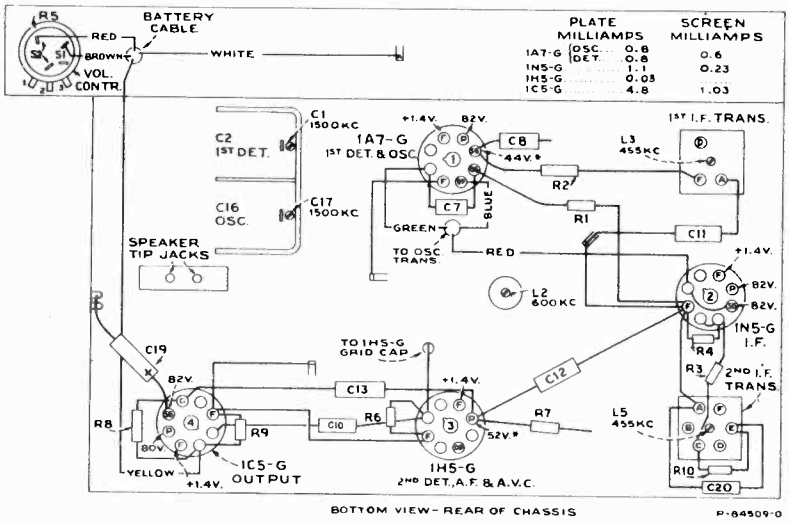
CURRENT CONSUMPTION

"A" 0.24 ampere—"B," 9.0 milliamperes

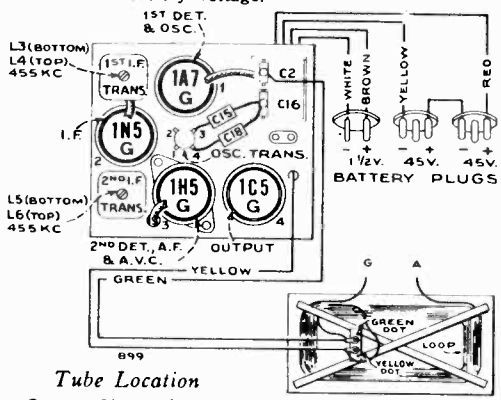
Note: Values with star (*) are operating voltages. Values not starred are actual measured voltages.

Measurements are made to chassis unless otherwise indicated, with set tuned to quiet point. Values should hold within approximately ± 20% with rated battery voltage.

Frequency Range	540-1,560 kc
Intermediate Frequency	455 kc



R-F Wiring Diagram and Socket Voltages



Tube Location

Alignment Procedure

Output Meter Alignment.—If this method is used, connect the meter across the voice coil, and turn the receiver volume control to maximum.

Test-oscillator.—For all alignment operations, keep the output as low as possible to avoid a-v-c action.

Pre-setting Dial.—With gang condenser in full mesh, the pointer should be horizontal.

Precautionary Lead Dress.—

1. Dress speaker leads down to chassis.
2. The green lead from the loop to the antenna section of the gang should be dressed between the output and detector tube shields and pulled toward the far corner of the loop by means of the rubber band.
3. The spiral shield on the 1st-A.F. grid lead should be brought as close as possible to the grid cap.
4. Leads to the high side and tap of the volume control should be dressed down to the chassis and away from the output tube plate lead.

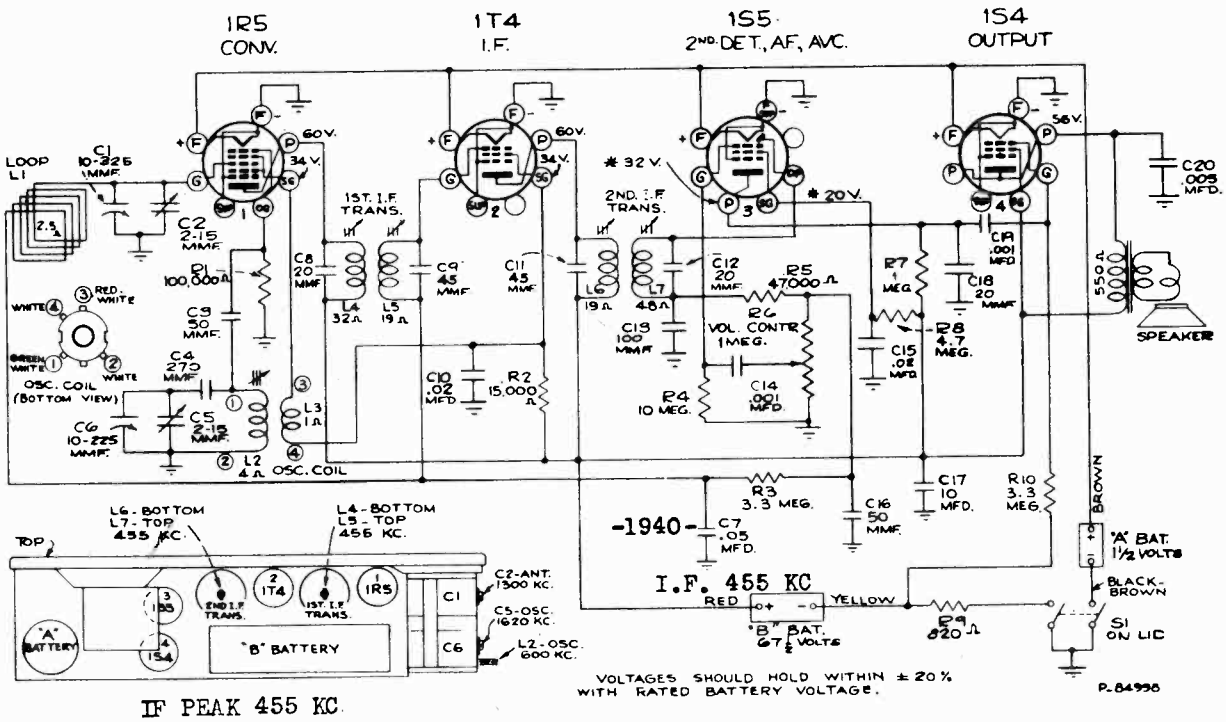
Antenna.—An antenna and ground may be connected to "A" and "G" at bottom of cabinet. If total length of antenna and lead-in is more than 150 feet, connect a 300 mmf capacitor in series with lead-in.

Steps	Connect the high side of test-oscillator to—	Tune test-osc. to—	Turn radio dial to—	Adjust the following for max. peak output—
1	1N5-G grid cap, in series with .001 mfd.	455 kc	Quiet point between 550-750 kc	L5 and L6 (2nd I-F transformer)
2	1A7-G grid cap, in series with .001 mfd.	455 kc		L3 and L4 (1st I-F transformer)
3	Assemble chassis and batteries in correct position in cabinet, and fasten rear cover (loop) in place while making the following adjustments, which are accessible through holes in the bottom of the cabinet.			
4	Antenna terminal, in series with 200 mfd. Connect low side of test-osc. to "G" term.	1500 kc	1500 kc*	C17 (osc.) C1 (ant.)
5		600 kc	600 kc*	L2 (osc.) Rock in
6	Repeat steps 4 and 5.			

* Use bottom of "1" in "1500" for 1500 kc calibration point, and use center of the last "0" in "600" for 600 kc calibration point.

MODELS WR-682, WR-682A

WESTINGHOUSE ELEC. SUPPLY CO. INC.



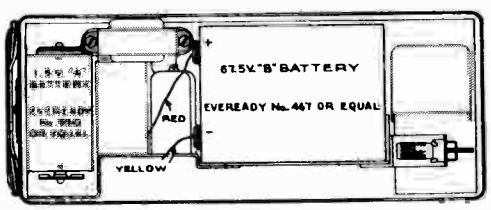
Schematic Circuit Diagram

Alignment Procedure

Output Meter Alignment.—If this method is used, connect the meter across the voice coil, and turn the receiver volume control to maximum.

Test-Oscillator.—For all alignment operations, keep the output as low as possible to avoid a-v-c action.

Steps	Connect the high side of test-osc. to—	Tune test-osc. to—	Turn radio dial to—	Adjust the following for max. peak output—
1	Tuning condenser stator (ant.) in series with .01 mfd.	455 kc	Quiet point at 1,600 kc end of dial	L7, L6, L5, L4 (2nd and 1st I-F transformers)
2	Radiated signal 1,620 kc	1,620 kc	Full clockwise (out of mesh)	C5 (oscillator)
3	Radiated signal 1,300 kc	1,300 kc signal	1,300 kc	C2 (antenna)
4	Radiated signal 600 kc	600 kc	600 kc	L2 (osc.)
5	Repeat steps 2, 3 and 4.			



Back View—Cover removed

Replacing Lid or Front Panel:

When the molded lid (which contains the loop antenna), or the chrome front panel requires replacement, it is not necessary to replace the complete assembly of lid and front panel, as either one may be replaced separately in a few minutes by taking out the hinge pins as described below.

The following parts are available for this purpose:

PART No.	
37808	Lid and antenna (type without lid support)
37812	Chrome front panel (type without lid support)
37809	Lid and antenna (type with lid support)
37813	Front chrome panel (type with lid support)
37857	Two hinge pins and two hinge springs

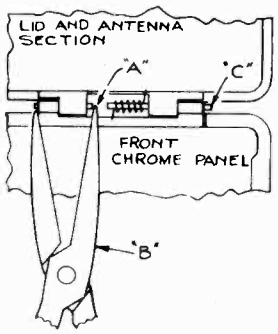
Installation Instructions:

First remove the three self-tapping screws that hold the chassis in the center case, and remove the case. Unsolder the leads from the loop lugs.

(a) With lid closed, cut hinge pins at point "A" with sharp cutters.

(b) Start removal of pin sections as shown, using long-nose pliers.

(c) Grasp end of pin section with long-nose pliers and pull out of hinge.



Replacing Lid or Chrome Panel

(d) Install new lid, or new front panel, using the replacement hinge pins and springs that are provided with replacement lids and panels. Arrange springs as shown. Apply a small amount of "Thermoplastic Cement" (G.E. ZV 5057) near outer end of each pin to insure tight and permanent fit.

Loose Control Knobs:

If for any reason either the tuning or volume control knob should become loose on its shaft, it may be rigidly mounted in the following manner:

(a) Remove the loose control knob from its shaft and scrape off the old cement from both shaft and control knob.

(b) Apply a generous even coating of a good cement to the shaft region which is to engage the knob. G.E. Thermoplastic cement, ZV-5057, is excellent for this purpose; it is a green fluid, easily thinned with acetone if necessary.

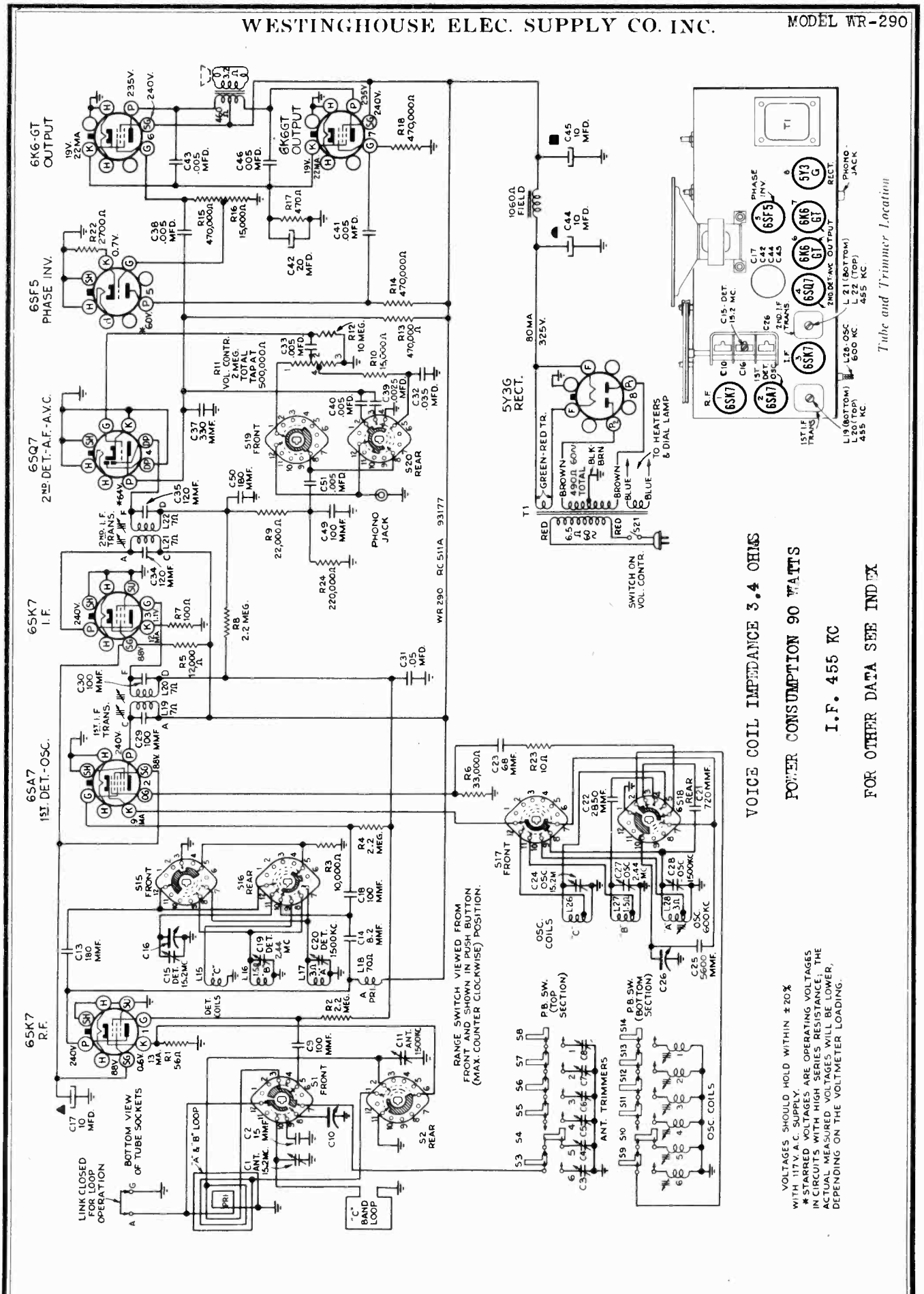
(c) Allow the cement on the shaft to air-dry, to evaporate any acetone present.

(d) Apply a small amount of heat to the shaft, sufficient to soften the cement.

(e) Mount knob on shaft while cement is still soft, and allow a few minutes for drying.

WESTINGHOUSE ELEC. SUPPLY CO. INC.

MODEL WR-290



Cathode-Ray Alignment is the preferable method. Connections for the oscillograph are shown in the chassis drawing.

Output Meter Alignment.—If this method is used, connect the meter across the voice coil, and turn the receiver volume control to maximum.

Test-Oscillator.—For all alignment operations, connect the low side of the test oscillator to the receiver chassis, and keep the output as low as possible to avoid a-v-c action.

Calibration for Alignment.—The proper dial calibration for alignment purposes can be set up in two ways:

1. The dial may be removed from the cabinet by sliding out the two spring pieces which clamp it in its mounting position. The condenser plates should then be turned into full mesh, the pointer adjusted to the scratch at the left end of the dial backing plate, and the dial slipped under the pointer so that its extreme left calibration mark coincides with the pointer. The dial may be held in place with scotch tape. In this manner the actual receiver dial is used for alignment. When alignment is finished, the scale should be replaced including the fibre light shields which are folded under the ends of the glass scale.
2. A calibration scale is attached to the tuning drum. The correct setting of the gang, in degrees, for each alignment frequency is given in the alignment table. Check the position of the drum, making sure that the 0 degree scale mark is horizontal with the gang in full mesh.

Pointer for Calibration Scale.—If method (2) is used, improvise a pointer for the calibration scale by fastening a piece of wire to the chassis, and bend the wire so that it points to the 0 degree mark on the calibration scale when the plates are fully meshed.

* Use minimum capacity peak if two can be obtained. Check to determine that C-24 has been adjusted to correct peak by tuning receiver to approximately 14.29 mc where a weaker signal should be received.

Note.—Oscillator tracks above signal on all bands

To reduce sensitivity during RF Alignment connect a 15,000 ohm, ½ watt resistor across secondary of 1st IF transformer.

Push Button Adjustment

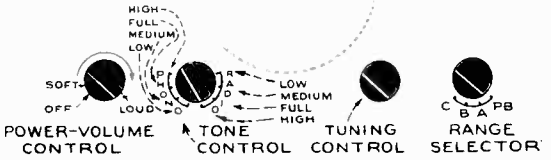
The push buttons connect to separate magnetite-core oscillator coils and separate antenna trimmers which must be adjusted for the desired stations. Use an insulated screwdriver or alignment tool. Allow at least five minutes warm-up period before making adjustments.

In the event that the receiver is to be used with an external antenna use one or two feet of wire (as an antenna) to ensure sharp peaking during the final adjustment procedure. For loop operation, the link should be strapped across "A" and "G" terminals on back of set. In either case the procedure is as follows:

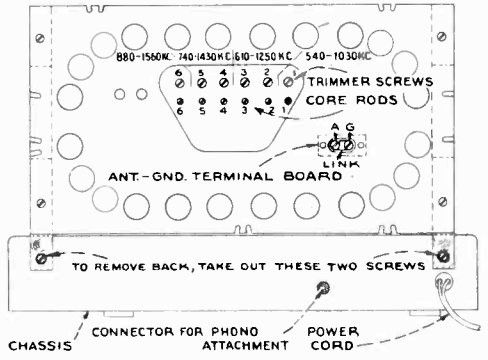
1. Make a list of the desired stations, arranged in order from low to high frequencies.
2. Turn the range selector to "A" band, and manually tune in the first station on the list.
3. Turn Range Control knob to "PB" and press push button No. 1 and adjust No. 1 oscillator core to receive this station. Screw the core all the way in, to lowest frequency, and then unscrew slowly until station is received.
4. Adjust No. 1 antenna trimmer for maximum output on this station.
   Owing to the relatively high R-F gain, it may be found that there are several settings of each push-button magnetite core that will bring in any particular station. In such cases it is advisable to unscrew the push button antenna trimmers to minimum capacity before adjusting the oscillator cores.
   Clockwise adjustment of cores and trimmers tunes the circuits to lower frequencies.
5. Adjust for each of the remaining stations in the same manner.
6. After all stations are tuned-in on the buttons, make a final careful adjustment of all core rods until best reception is obtained for each. Outdoor antenna should not be reconnected if used.

Alignment Procedure

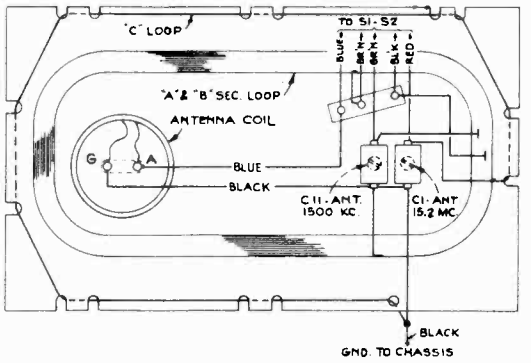
Steps	Connect high side of test oscillator to—	Tune test osc. to—	Turn radio dial to—	Adjust the following for maximum peak output—
1	6SK7 I-F grid in series with 0.01 mfd.	455 kc	"A" band Quiet Point between 550 and 750 kc	L-21 and L-22 (2nd I-F Trans.)
2	6SA7 grid in series with 0.01 mfd.			L-19 and L-20 (1st I-F Trans.)
3	Antenna terminal in series with 300 ohms ("A" antenna trimmer C-11, should be ¼ turn out)	15.2 mc	15.2 mc (149°) "C" band	C-24 (Osc.)* C-15 (Det.) Rock gang C-1 (R-F) Rock gang
4	Antenna terminal in series with 200 mmf.	2.44 mc	2.44 mc (91.5°) "B" band	C-27 (Osc.) C-19 (Det.)
5	Antenna terminal in series with 200 mmf. (Preset "A" osc. trimmer C-28 ¼ turn out)	600 kc	600 kc (30.5°) "A" band	L-28 Rock gang
6	Antenna terminal in series with 200 mmf.	1,500 kc	1,500 kc (160°) "A" band	C-28 (Osc.) C-20 (Det.) C-11 (R-F)
7	Repeat step 5, then 6			
8	Antenna terminal in series with 300 ohms	15.2 mc	15.2 mc (149°) "C" band	C-1 (R-F) Rock gang



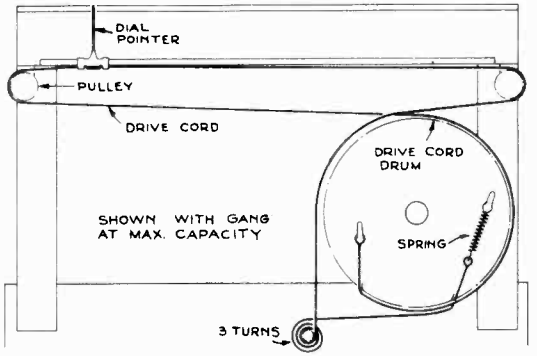
Location of Controls



Back of Chassis



Loop Connections and Trimmers



Dial-Indicator and Drive Mechanism

Frequency Ranges

Broadcast	540-1,600 kc
Medium Wave	1.56-4.0 mc
Short Wave	5.8-18.0 mc
Intermediate Frequency	455 kc

Power Output Rating

Undistorted	5.0 watts
Maximum	5.5 watts

Loudspeaker (RL-79-A5)

Type	6-inch Electrodynamic
V.C. Impedance	3.4 ohms at 400 cycles

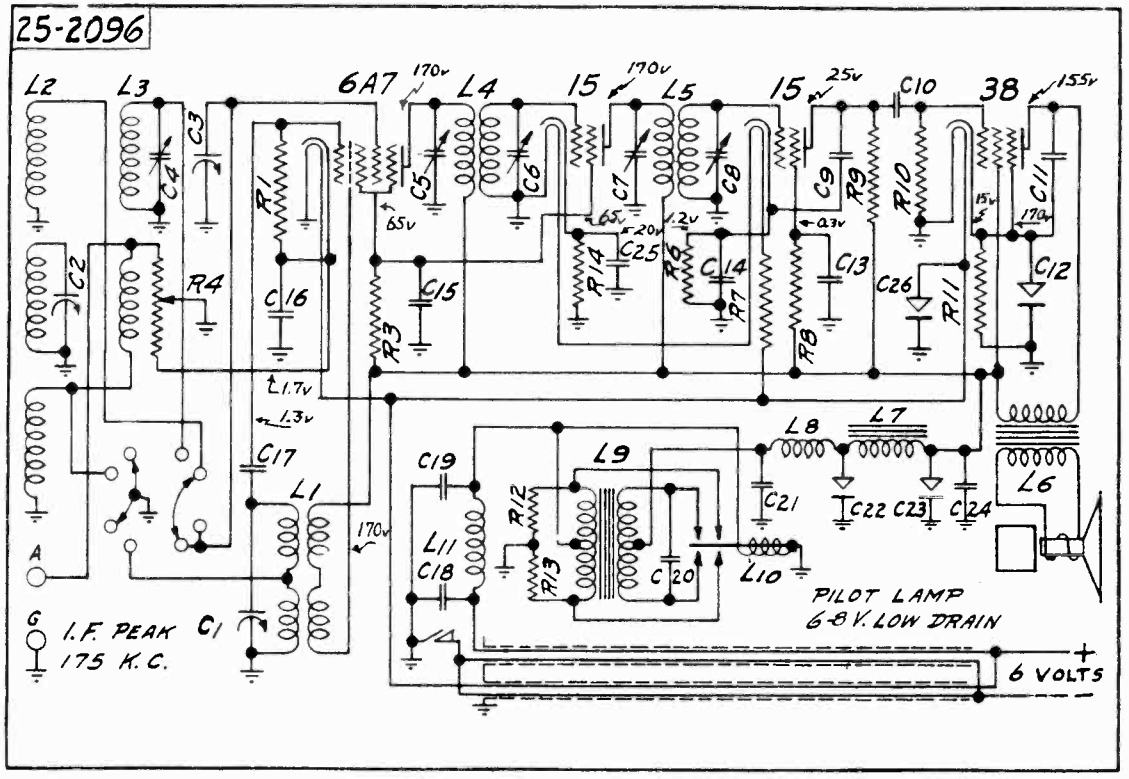
Power Supply Ratings

105-125 volts, 50-60 cycles, 90 watts
105-125 volts, 25-60 cycles, 90 watts

VOLTAGES MEASURED WITH A 1000 ohms-per-volt METER

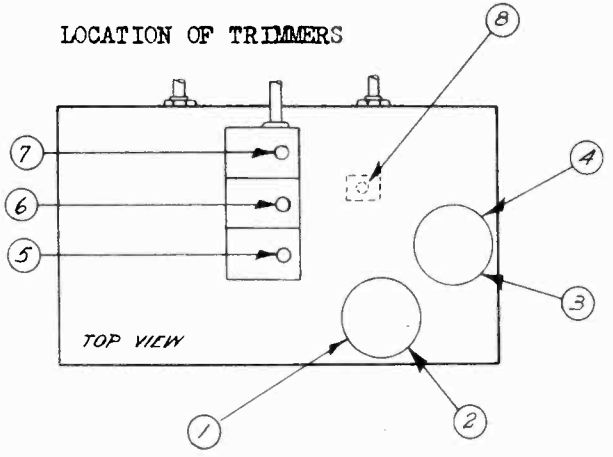
B+ VOLTAGE 170 BATTERY 6.2 volts

CODE	PART NO.	
		RESISTORS
R1	53-898	50,000 Ohm Oscillator Grid Resistor
R3	53-898	50,000 Ohm Osc. & I.F. Screen Resistor
R4	19-1296	10,000 Ohm Volume Control & Off-On Switch
R6	53-898	50,000 Ohm Second Det. Cathode Resistor
R7	53-2012	9.09 Ohm I.F. & Second Det. Filament Res.
R8	53-2008	10 Meg Ohm Second Detector Screen Resistor
R9	53-926	1 Meg Ohm Second Detector Plate Resistor
R10	53-925	500,000 Ohm Output Grid Resistor
R11	53-1065	1,000 Ohm Output Cathode Resistor
R12	53-1061	150 Ohm B Primary Regulator Resistor
R13	53-1061	150 Ohm B Primary Regulator Resistor
R14	53-1063	500 Ohm I.F. Cathode Resistor
		CONDENSERS
C1	77-833	16-328 MMFD. Osc. Section of 3 Gang Cond.
C2	77-833	16-366 MMFD. Pres. Section of 3 Gang Cond.
C3	77-833	16-366 MMFD. Pres. Section of 3 Gang Cond.
C4	78-2010	3-30 MMFD. Police Band Pres. Trimmer Cond.
C5	78-2011	First I.F. Primary Trimmer Condenser
C6	78-2008	First I.F. Secondary Trimmer Condenser
C7	78-2011	Second I.F. Primary Trimmer Condenser
C8	78-2008	Second I.F. Secondary Trimmer Condenser
C9	76-265	.001 Mfd. Mica Second Det. Plate Filter Cond.
C10	75-2003	.01 Mfd. 400 V. Paper Audio Feed Condenser
C11	75-2001	.002 Mfd. 600 V. Paper Output Plate Filter Cond.
C12	18-928	25 Mfd. 25 V. Dry Electrolytic Output Cathode Cond.
C13	75-2005	.1 Mfd. 200 V. Paper Second Det. Screen By-Pass
C14	75-2005	.1 Mfd. 200 V. Paper Second Det. Cathode By-Pass
C15	75-2005	.1 Mfd. 200 V. Paper Osc. & I.F. Screen By-Pass
C16	75-2005	.1 Mfd. 200 V. Paper Osc. Cathode By-Pass
C17	76-2002	.00005 Mfd. Mica Oscillator Grid Condenser
C18	75-2011	.5 Mfd. 200 V. Paper B Unit Supply Filter Cond.
C19	75-2011	.5 Mfd. 200 V. Paper B Unit Supply Filter Cond.
C20	75-1325	.015 Mfd. 1000 V. Oil B Secondary Wave Form Cond.
C21	75-2007	.1 Mfd. 400 V. Paper B Supply Filter Condenser
C22	18-2006	16 Mfd. 250 W.V. Wet Electrolytic B Filter Cond.
C23	18-2006	16 Mfd. 250 W.V. Wet Electrolytic B Filter Cond.
C24	75-2013	1. Mfd. 400 V. Paper B Supply By-Pass Condenser
C25	75-2005	.1 Mfd. 200 V. I.F. Cathode By-Pass Condenser
C26	18-928	25 Mfd. 25 W.V. Dry Electrolytic Condenser
		INDUCTANCES
L1	17-2101	Oscillator Coil Assembly
L2	17-2109	Broadcast Preselector Coil Assembly
L3	17-2103	Police Band Preselector Coil Assembly
L4	68-2031	First I.F. Transformer Assembly
L5	68-2031	Second I.F. Transformer Assembly
L6	64-2037	Permanent Magnet Dynamic Speaker With Output Transformer for #38 Tube
L7	14-940	20 Henry B Filter Choke
L8	17-2114	5500 Microhenry R.F. Choke
L9	80-2020	B Supply Transformer Assembly
L10	72-2001	Replaceable Plug-In Synchronous Vibrator
L11	17-1434	B Unit Supply Filter Choke



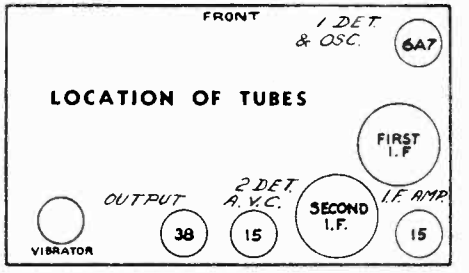
FOR ALIGNMENT, SEE INDEX

LOCATION OF TRIMMERS



CHASSIS
MODEL
6J4

FOR USE ONLY WITH
6 VOLTS D.C.
PILOT LIGHTS 6-8 V. - .15 A.
I. F. PEAK 175 K.C.



ALIGNMENT MODEL 6J4

SIGNAL GENERATOR CONNECTION	SIGNAL GENERATOR FREQUENCY	DIAL POSITION	WAVE BAND SWITCH POSITION	TRIMMER NUMBER	OUTPUT[1] SIGNAL
Remove Grid Clip from 6A7					
Control Grid of 6A7	175 K.C.	1400 K.C.	Broadcast (Left)	1	Max.
" " "	" "	" "	" "	2	Max.
" " "	" "	" "	" "	3	Max.
" " "	" "	" "	" "	4	Max.
Connect Grid Clip to 6A7					
*Ant. & Ground Posts	1400 K.C.	1400 K.C.	" "	5	Max.
" " "	" "	" "	" "	6	Max.
" " "	" "	" "	" "	7	Max.
" " "	4.0 M.C.	4.0 M.C.	Police (Right)	8	Max.

Volume Control in "Full-On" position at all times.
(*) Connect a standard dummy antenna between signal generator and receiver.
Note 1: Signal across primary of output transformer to be maintained at approximately 10 volts by adjusting signal generator.

ALIGNMENT MODEL 6P4

SIGNAL GENERATOR CONNECTION	SIGNAL GENERATOR FREQUENCY	DIAL POSITION	WAVE BAND SWITCH POSITION	TRIMMER NUMBER	OUTPUT[1] SIGNAL
Remove Grid Clip from 1C6					
Control Grid of 1C6	175 K.C.	1400 K.C.		1	Max.
" " "	" "	" "		2	Max.
" " "	" "	" "		3	Max.
" " "	" "	" "		4	Max.
" " "	1400 K.C.	" "		5	Max.
" " "	" "	" "		6	Max.
" " "	" "	" "		7	Max.
" " "	1000 K.C.	1000 K.C.		5[2]	Max.
" " "	" "	" "		6[2]	Max.
" " "	" "	" "		7[2]	Max.
" " "	600 K.C.	600 K.C.		5[2]	Max.
" " "	" "	" "		6[2]	Max.
" " "	" "	" "		7[2]	Max.

Volume Control in "Full-On" position at all times.
(*) Connect a standard dummy antenna between signal generator and ground.
Note 1: Signal across primary of the output transformer at no time to exceed 50 volts.
Note 2: Due to formed oscillator plates, set should track. If not, bend slotted plates at this point and recheck at 1400 K.C.

ALIGNMENT MODELS 7C6 - 7CB6 - 7D6

SIGNAL GENERATOR CONNECTION	SIGNAL GENERATOR FREQUENCY	DIAL POSITION	WAVE BAND SWITCH POSITION	TRIMMER NUMBER	OUTPUT[1] SIGNAL
Remove Grid Clip from 6A7					
Control Grid of 6A7	175 K.C.	1400 K.C.	Broadcast (Left)	1	Max.
" " "	" "	" "	" "	2	Max.
" " "	" "	" "	" "	3	Max.
" " "	" "	" "	" "	4	Max.
Connect Grid Clip to 6A7					
*Ant. & Ground Posts	1400 K.C.	1400 K.C.	" "	5	Max.
" " "	" "	" "	" "	6	Max.
" " "	" "	" "	" "	7	Max.
" " "	600 K.C.	600 K.C.	" "	5[2]	Max.
" " "	" "	" "	" "	6[2]	Max.
" " "	" "	" "	" "	7[2]	Max.
" " "	4.0 M.C.	4.0 M.C.	Police (Center)	8	Max.
" " "	14.0 M.C.	14.0 M.C.	Foreign (Right)	9	Max.

Volume Control in "Full-On" position at all times.
(*) Connect a standard dummy antenna between signal generator and receiver.
Note 1: Signal across primary of output transformer to be maintained at approximately 25 volts by adjusting signal generator.
Note 2: Due to formed oscillator plates, set should track. If not, bend slotted plates at this point and recheck at 1400 K.C.

ALIGNMENT MODEL 6M6

SIGNAL GENERATOR CONNECTION	SIGNAL GENERATOR FREQUENCY	DIAL POSITION	WAVE BAND SWITCH POSITION	TRIMMER NUMBER	OUTPUT[1] SIGNAL
Remove Grid Clip from 6A7					
Control Grid of 6A7	115 K.C.	214.3 Meters	Broadcast (Center)	1	Max.
" " "	" "	" "	" "	2	Max.
" " "	" "	" "	" "	3	Max.
" " "	" "	" "	" "	4[2]	Max.
Connect Grid Clip to 6A7					
*Ant. & Chassis (Wht.Lead)	1400 K.C.	" "	" "	5	Max.
" "	600 K.C.	500 "	" "	5[3]	Max.
" "	1400 "	214.3 "	" "	5	Max.
" "	" "	" "	" "	6	Max.
" "	" "	" "	" "	7	Max.
" "	15.0 M.C.	20 "	Foreign (Right)	8	Max.
" "	6.0 "	50 "	" "	8[4]	Max.
" "	353 K.C.	850 "	Long Wave (Left)	9	Max.
" "	150 "	2000 "	" " "	10	Max.
" "	353 "	850 "	" " "	9	Max.
" "	" "	" "	" " "	11	Max.
" "	" "	" "	" " "	12	Max.

Volume Control in "Full-On" position at all times.
(*) Connect a standard dummy antenna between signal generator and receiver.
Note 1: Signal across primary of the output transformer at no time to exceed 50 volts.
Note 2: Repeat above procedure and critically trim each adjustment to absolute resonance to insure perfect alignment.
Note 3: Check ganging and if necessary bend plates and recheck at 1400 K.C.
Note 4: Check ganging at this point.

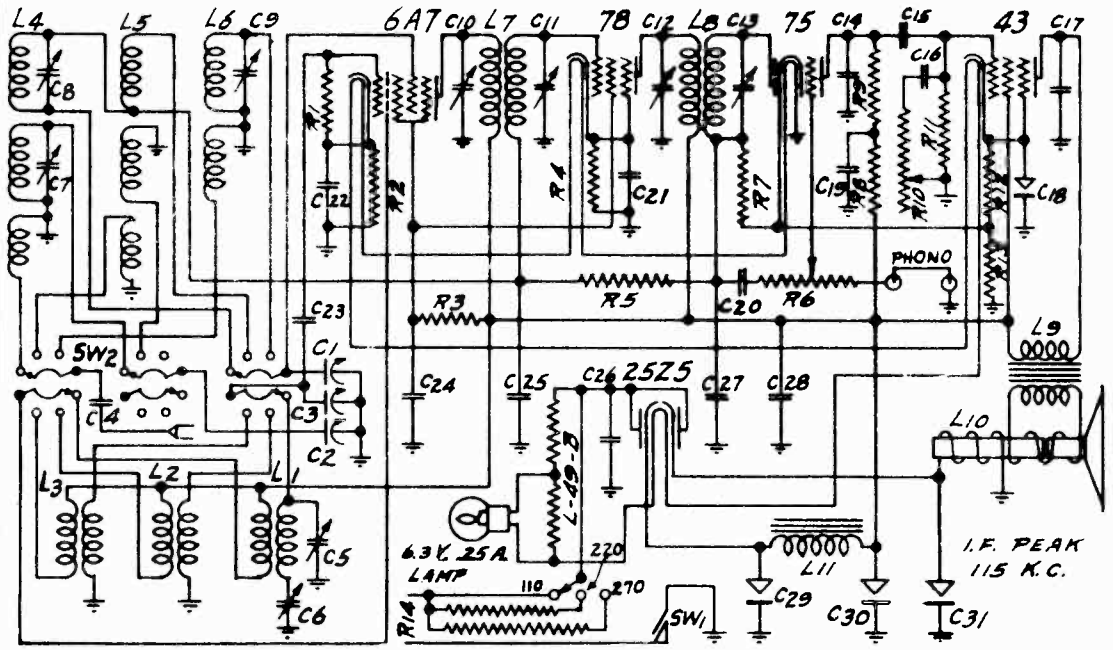
ALIGNMENT MODEL 6S12

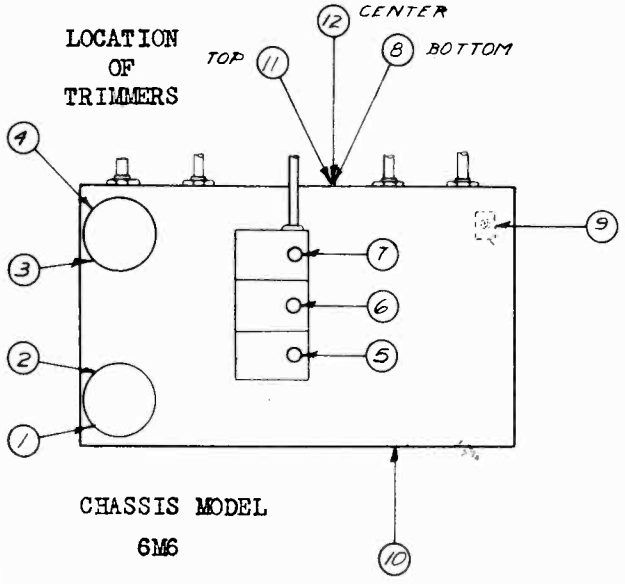
SIGNAL GENERATOR CONNECTION	SIGNAL GENERATOR FREQUENCY	DIAL POSITION	WAVE BAND SWITCH POSITION	TRIMMER NUMBER	OUTPUT SIGNAL
Remove Grid Clip from 6A8					
Control Grid of 6A8	456 K.C.	1400 K.C.	Broadcast (Right)	1[1]	Max.
" " "	" "	" "	" "	2	Max.
" " "	" "	" "	" "	3	Max.
" " "	" "	" "	" "	4	Max.
" " "	" "	" "	" "	5	Max.
" " "	" "	" "	" "	6[2]	Max.
Connect Grid Clip to 6A8					
*Ant. & Ground Posts	1400 K.C.	1400 K.C.	" "	7	Max
" " "	" "	" "	" "	8	Max.
" " "	" "	" "	" "	9	Max.
" " "	600 K.C.	600 K.C.	" "	10	Max.
" " "	1400 K.C.	1400 K.C.	" "	7[3]	Max.
" " "	1000 K.C.	1000 K.C.	" "	7[4]	Max.
" " "	" "	" "	" "	8[4]	Max.
" " "	" "	" "	" "	9[4]	Max.
" " "	4.0 M.C.	4.0 M.C.	Police (Center)	11	Max.
" " "	" "	" "	" "	12	Max.
" " "	" "	" "	" "	13	Max.
" " "	1700 K.C.	1700 K.C.	" "	14	Max.
" " "	4.0 M.C.	4.0 M.C.	" "	11	Max.
" " "	14.0 M.C.	14.0 M.C.	Foreign (Left)	15	Max.
" " "	" "	" "	" "	16	Max.
" " "	456 K.C.	1400 K.C.	Broadcast (Right)	17	Min.

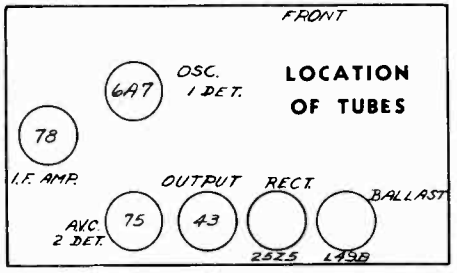
Volume Control in "Full-On" position at all times.
(*) Connect a standard dummy antenna between signal generator and receiver.
Note 1: Tone control must be turned partially toward its bass position, or off the high fidelity position.
Note 2: Repeat above procedure and critically trim each adjustment to absolute resonance to insure perfect alignment. The I.F. sensitivity should be from 2 to 4 microvolts.
Note 3: Repeat above procedure and critically trim each adjustment to absolute resonance.
Note 4: Investigate scale tracking and sensitivity at this point and bend slotted rotor plates if necessary.

25-2084

FOR ALIGNMENT, SEE INDEX







VOLTAGE TABLE

TUBE	PL.	SC.	K	2 PL.	2 GR.
6A7	125	55	1.3	125	- 2.7
78	125	55	2.2		
75	42		1.5		
43	115	125	20		

B+ VOLTAGE ——————— 125
SPEAKER FIELD VOLTAGE ——— 125
LINE VOLTAGE WAS 220 V. 60 CYCLE
METER 1000 OHMS - PER-VOLT

RESISTORS

CODE	PART NO.	
R1	53-898	50,000 Ohm Oscillator Grid Resistor
R2	53-1062	250 Ohm Oscillator Cathode Resistor
R3	53-1042	25,000 Ohm 6A7 & 78 Screen Resistor
R4	53-1063	500 Ohm 78 Cathode Resistor
R5	53-926	1 Meg Ohm A.V.C. Network Resistor
R6	19-1315	500,000 Ohm Volume Control
R7	53-925	500,000 Ohm Diode Resistor
R8	53-898	50,000 Ohm 75 Plate Hum Resistor
R9	53-924	250,000 Ohm 75 Plate Resistor
R10	19-1317	250,000 Ohm Tone Control
R11	53-926	500,000 Ohm 43 Grid Resistor
R12	53-1062	500 Ohm 43 Cathode Resistor
R13	53-1122	40 Ohm 75 Cathode Resistor
R14	20-2004	Line Power Cord Assembly

CONDENSERS

C1	77-833	366 MMFD. Preselector Section of 3 Gang
C2	77-833	366 MMFD. Preselector Section of 3 Gang
C3	77-833	328 MMFD. Oscillator Section of 3 Gang
C4	75-2003	.01 Mfd. 400 V. Paper Antenna Series Cond.
C5	78-2010	3-30 MMFD. Long Wave Osc. Parallel Trimmer
C6	78-2006	Long Wave Oscillator Series Trimmer
C7	78-1588	3-30 MMFD. Long Wave Preselector Trimmer
C8	78-1588	3-30 MMFD. Long Wave Preselector Trimmer
C9	78-1588	3-30 MMFD. Foreign Band Preselector Trimmer
C10	78-993	First I. F. Primary Trimmer
C11	78-1228	First I. F. Secondary Trimmer
C12	78-993	Second I. F. Primary Trimmer
C13	78-2015	Second I. F. Secondary Trimmer
C14	76-265	.001 Mfd. Mica 75 Plate Filter Condenser
C15	75-2003	.01 Mfd. 400 V. Paper Audio Feed Condenser
C16	75-2003	.01 Mfd. 400 V. Paper Tone Control Cond.
C17	75-2002	.004 Mfd. 600 V. Paper 43 Plate Filter Cond.
C18	18-[illegible]	25 Mfd. 25 V. Elect. 43 Cathode By-Pass Cond.
C19	75-2005	.1 Mfd. 200 V. Paper 75 Plate Hum Filter Cond.
C20	75-2003	.01 Mfd. 400 V. Paper Audio Feed Condenser
C21	75-2005	.1 Mfd. 200 V. Paper 78 Cathode By-Pass Cond.
C22	75-2005	.1 Mfd. 200 V. Paper 6A7 Cathode By-Pass Cond.
C23	76-2002	.00005 Mfd. Mica Oscillator Grid Condenser
C24	75-2005	.1 Mfd. 200 V. Paper 6A7 & 78 Screen By-Pass Cond.
C25	75-2005	.1 Mfd. 200 V. Paper A.V.C. By-Pass Condenser
C26	75-2005	.1 Mfd. 200 V. Paper Line By-Pass Condenser
C27	76-307	.0005 Mfd. Mica Diode Filter Condenser
C28	75-2011	.5 Mfd. 200 V. Paper B Supply By-Pass Condenser
C29	18-2003	11 Mfd. 150 W.V. Dry Electrolytic Condenser
C30	18-2003	4 Mfd. 150 W.V. Dry Electrolytic Condenser
C31	18-2003	4 Mfd. 150 W.V. Dry Electrolytic Condenser

INDUCTANCES

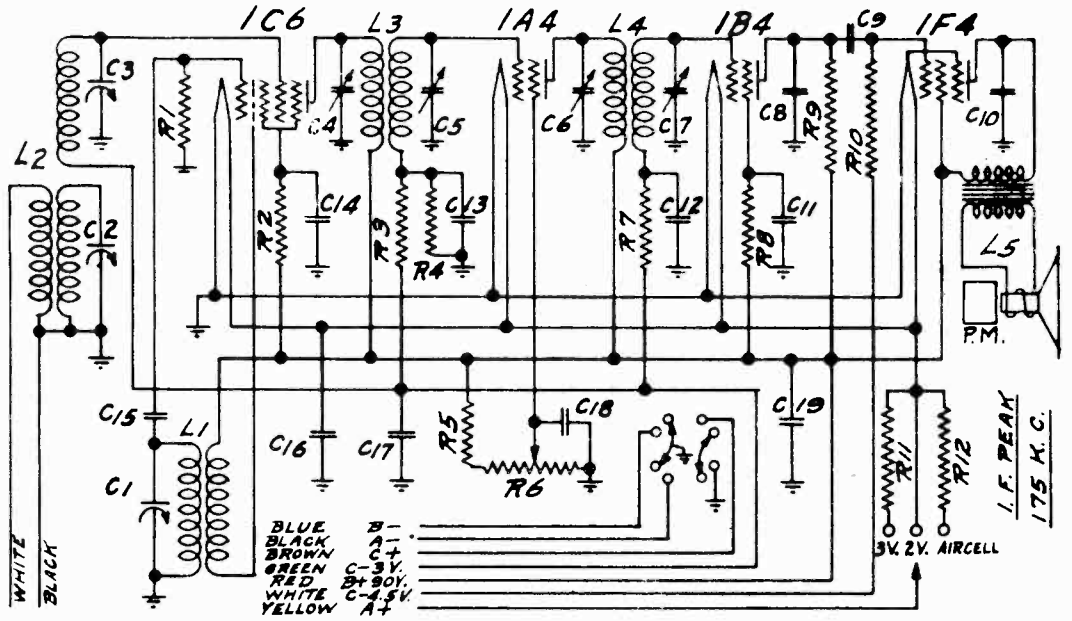
L1	17-2013	Long Wave Oscillator Coil Assembly
L2	17-2013	Broadcast Oscillator Coil Assembly
L3	17-2095	Foreign Band Oscillator Coil Assembly
L4	17-2093	Long Wave Preselector Coil Assembly
L5	17-2093	Broadcast Preselector Coil Assembly
L6	17-2096	Foreign Band Preselector Coil Assembly
L7	68-2022	First I. F. Transformer Assembly
L8	68-2029	Second I. F. Transformer Assembly
L9	64-1653	43 Output Transformer on L10
L10	64-1653	6½" Speaker 3000 Ohm Field
L11	14-940	20 Henry Filter Choke
SW1	66-2010	Line Power Switch
SW2	66-2009	Wave Band Change Switch

WILCOX-GAY CORP.

MODEL 6M6

WILCOX GAY PAGE 12-3

25-2094



COLOR	PART NO.	RESISTORS
R1	53-898	50,000 Ohm Oscillator Grid Resistor
R2	53-920	10,000 Ohm 1C6 Screen Resistor
R3	53-923	100,000 Ohm 1A4 Grid Isolation Resistor
R4	53-898	50,000 Ohm 1A4 Grid Resistor
R5	53-1042	25,000 Ohm 1A4 Screen Resistor
R6	19-1315	500,000 Ohm Volume Control
R7	53-923	100,000 Ohm 1B4 Grid Isolation Resistor
R8	53-925	500,000 Ohm 1B4 Screen Resistor
R9	53-924	250,000 Ohm 1B4 Plate Resistor
R10	53-925	500,000 Ohm 1F4 Grid Resistor
R11	53-2010	2.5 Ohm Filament Series Resistor
R12	53-2009	1.0 Ohm Filament Series Resistor

CONDENSERS

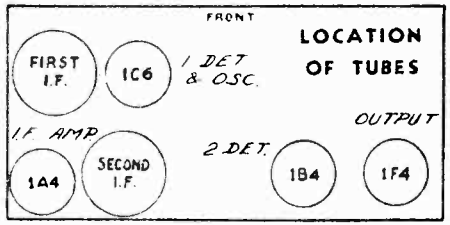
C1	77-833	Oscillator Section of 3 Gang Condenser
C2	77-833	First Preselector Section of 3 Gang Condenser
C3	77-833	Second Preselector Section of 3 Gang Condenser
C4	78-2008	First I.F. Primary Trimmer Condenser
C5	78-2011	First I.F. Secondary Trimmer Condenser
C6	78-2008	Second I.F. Primary Trimmer Condenser
C7	78-2011	Second I.F. Secondary Trimmer Condenser
C8	76-662	.002 Mfd. Mica Second Det. Plate Filter Cond.
C9	75-2003	.01 Mfd. 400 V. Paper Audio Feed Condenser
C10	75-2001	.002 Mfd. 600 V. Paper Output Plate Filter Cond.
C11	75-2005	.1 Mfd. 200 V. Paper Second Detector Screen By-Pass
C12	75-2005	.1 Mfd. 200 V. Paper 1B4 Grid Isolation By-Pass
C13	75-2005	.1 Mfd. 200 V. Paper 1A4 Grid Isolation By-Pass
C14	75-2005	.1 Mfd. 200 V. Paper 1C6 Screen By-Pass Condenser
C15	76-2002	.00005 Mfd. Mica Oscillator Grid Condenser
C16	75-2015	1. Mfd. 400 V. Paper Filament By-Pass Condenser
C17	75-2006	.1 Mfd. 200 V. Paper A.V.C. Network By-Pass Cond.
C18	75-2005	.1 Mfd. 200 V. Paper 1A4 Screen By-Pass Cond.
C19	75-2011	.5 Mfd. 200 V. Paper B+ By-Pass Condenser

INDUCTANCES

L1	17-2111	Oscillator Coil Assembly
L2	17-2100	Preselector Coil Assembly
L3	68-2012	First I.F. Transformer Assembly
L4	68-2030	Second I.F. Transformer Assembly
L5	64-2036	Permanent Magnet Dynamic Speaker - Output Trans. 1F4 Tube

TUBE	CIRCUIT	PLATE TO GROUND	SCREEN TO GROUND	GRID TO GROUND	2 PL. TO GROUND	2 GRID TO GROUND
1C6	1ST DET. & OSC.	90	60	- 3 V.	90	- 7
1A4	I.F. AMPLIFIER	90	NOTE	- .3		
1B4	2ND DETECTOR	30	25	- .3		
1F4	POWER OUTPUT	85	90			

NOTE FOR 1A4
SCREEN WITH VOLUME CONTROL OFF IS 0 VOLTS
SCREEN WITH VOLUME CONTROL ON IS 50 VOLTS



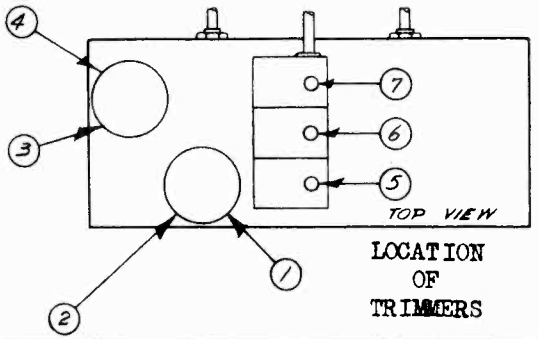
FOR USE ONLY WITH
"B" 90-135 V. D.C.
"A" 2-3 V. D.C.

I. F. PEAK 175 K.C.

CHASSIS MODEL
6P4

BLUE	B-
BLACK	A-
BROWN	C-
GREEN	C- 3 V.
RED	B+ 90 V.
YELLOW	A+ 2 V.
WHITE	C- 4.5 V.

FOR ALIGNMENT, SEE INDEX

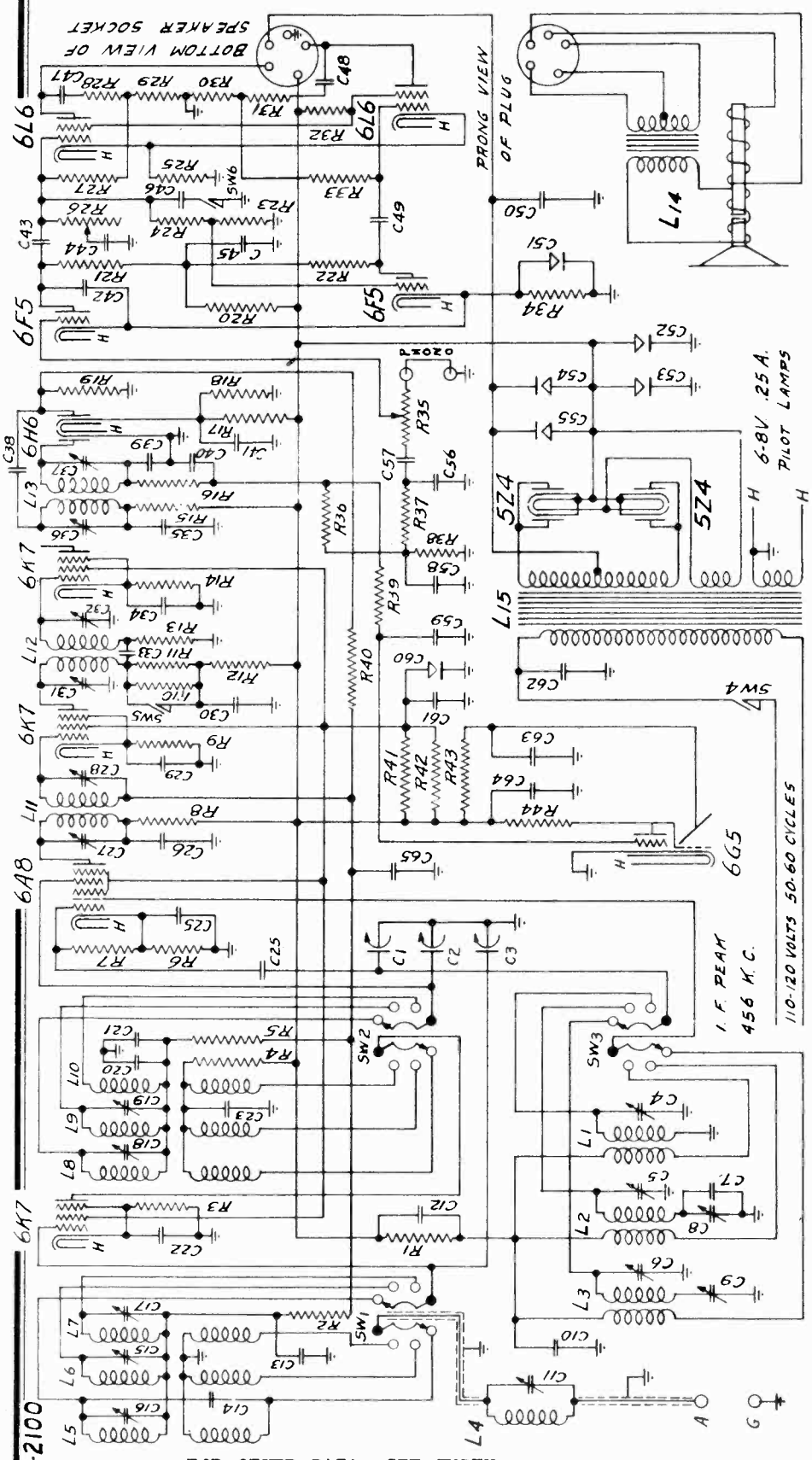


LOCATION OF TRIMMERS

WILCOX-GAY CORP.

WILCOX-GAY CORP.

MODEL 6S12



TUBE	CIRCUIT	PLATE TO GROUND	SCREEN TO GROUND	CATHODE TO GROUND	2ND PLATE TO GROUND	2ND GRID TO GROUND
6K7	R.F. AMPLIFIER	265	90	3.4		
6A8	OSC. & 1ST DETECTOR	320	90	3.4	212	- 18
6K7	I.F. AMPLIFIER	260	90	3.4		
6K7	1.F. AMPLIFIER	265	90	3.0		
6H6	2ND DETECTOR & AVC			50 - AVC CATHODE		
6F5	1ST AUDIO AMPLIFIER	100		1.8		
6F5	INVERTER	100				
6L6	OUTPUT	390	275	18	TARGET	
6L6	OUTPUT	390	275	18	265	
6G5	TUNING	20				

PILOT LIGHTS 6-8 V.
I. F. PEAK 456 K.C.

FOR USE ONLY WITH
110-120 V . 50-60 CYCLE

25-2100

FOR OTHER DATA, SEE INDEX

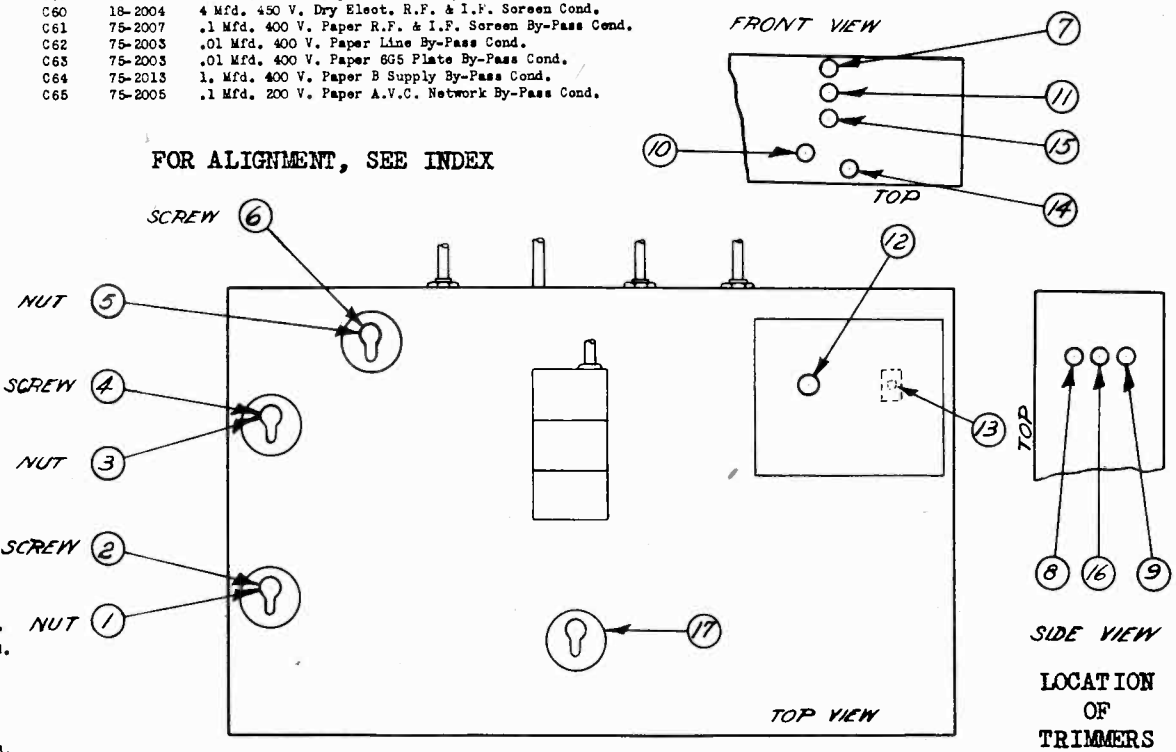
CODE	PART NO.	NAME
	RESISTOR	
R1	53-196	25,000 Ohm Type J Osc. Plate Resistor
R2	53-923	100,000 Ohm Type M A.V.C. Network Resistor
R3	53-1063	500 Ohm R.F. Amp. Cathode Resistor
R4	53-196	25,000 Ohm Type J R.F. Amp. Plate Resistor
R5	53-923	100,000 Ohm Type M A.V.C. Network Resistor
R6	53-1062	250 Ohm 6A8 Cathode Resistor
R7	53-941	20,000 Ohm Type M Osc. Grid Resister
R8	53-196	25,000 Ohm Type J 6A8 Plate Isolation Resistor
R9	53-1063	500 Ohm First I.F. Cathode Resistor
R10	53-922	75,000 Ohm First I.F. Plate Isolation Resistor
R11	53-898	50,000 Ohm First I.F. Plate Isolation Resistor
R12	53-196	25,000 Ohm Type J First I.F. Plate Isolation Resistor
R13	53-919	5,000 Ohm Type M High Fidelity Coupling Resistor
R14	53-1063	500 Ohm Second I.F. Cathode Resistor
R15	53-196	25,000 Ohm Type J Second I.F. Plate Isolation Resistor
R16	53-898	50,000 Ohm Detector Diode Filter Resistor
R17	53-924	250,000 Ohm A.V.C. Cathode Resistor
R18	53-898	50,000 Ohm A.V.C. Cathode Resistor
R19	53-926	500,000 Ohm A.V.C. Diode Load Resistor
R20	53-923	100,000 Ohm 6F5's Plate Hum Resistor
R21	53-924	250,000 Ohm First Audio Plate Resistor
R22	53-924	250,000 Ohm Invertor Plate Resistor
R23	53-941	20,000 Ohm Invertor Grid Resistor
R24	53-926	1 Meg Ohm Invertor Network Resistor
R25	53-1061	150 Ohm 6L6's Cathode Resistor
R26	19-2004	250,000 Ohm Tone Control
R27	53-926	1 Meg Ohm 6L6 Grid Resistor
R28	53-925	500,000 Ohm Audio Degeneration Network Resistor
R29	53-921	40,000 Ohm Audio Degeneration Network Resistor
R30	53-921	40,000 Ohm Audio Degeneration Network Resistor
R31	53-925	500,000 Ohm Audio Degeneration Network Resistor
R32	53-278	20,000 Ohm Type J 6L6 Soreen Resistor
R33	53-926	500,000 Ohm 6L6 Grid Resistor
R34	53-2003	2,000 Ohm 6F5's Cathode Resistor
R35	19-2005	500,000 Ohm Volume Control & Line Switch
R36	53-925	500,000 Ohm Detector Diode Load Resistor
R37	53-920	10,000 Ohm Audio Filter Network Resistor
R38	53-923	100,000 Ohm Detector Diode Load Resistor
R39	53-926	1 Meg Ohm 6G5 Grid Resistor
R40	53-925	500,000 Ohm A.V.C. Network Resistor
R41	53-922	75,000 Ohm R.F. & I.F. Soreen Resistor
R42	53-922	75,000 Ohm R.F. & I.F. Soreen Resistor
R43	53-923	100,000 Ohm 6G5 Plate Resistor
R44	53-926	1 Meg Ohm 6G5 Triode Plate Resistor
	CONDENSERS	
C1	77-1581	Oscillator Section of 3 Gang Condenser
C2	77-1581	Second Preselector Section of 3 Gang Cond.
C3	77-1581	First Preselector Section of 3 Gang Cond.
C4	78-1588	3-30 MMFD. Foreign Band Oscillator Trimmer
C5	78-1588	3-30 MMFD. Police Band Osc. Parallel Trimmer
C6	78-1588	3-30 MMFD. Broadcast Band Osc. Parallel Trimmer
C7	76-265	.001 Mfd. Mica Police Band Osc. Series Cond.
C8	78-1572	1600 MMFD. Police Band Osc. Series Trimmer
C9	78-1572	600 MMFD. Broadcast Oscillator Series Trimmer
C10	75-2003	.01 Mfd. 400 V. Paper Osc. Plate Isolation Cond.
C11	78-2016	Wave Trap Trimmer Condenser
C12	76-662	.002 Mfd. Mica Osc. Plate Filter Condenser
C13	75-2005	.1 Mfd. 200 V. Paper A.V.C. Network By-Pass Cond.
C14		Broadcast Antenna Coil Coupling Capacitor
C15	78-2010	3-30 MMFD. Police Band Antenna Trimmer Cond.
C16	78-1588	3-30 MMFD. Broadcast Antenna Trimmer Cond.
C17	78-1588	3-30 MMFD. Foreign Band Antenna Trimmer Cond.
C18	78-1588	3-30 MMFD. Broadcast R.F. Trimmer Condenser
C19	78-2010	3-30 MMFD. Police Band R.F. Trimmer Condenser
C20	76-662	.002 Mfd. Mica A.V.C. Network R.F. Filter Cond.
C21	75-2005	.1 Mfd. 200 V. Paper A.V.C. Network By-Pass Cond.
C22	75-2005	.1 Mfd. 200 V. Paper R.F. Amp. Cathode By-Pass Cond.
C23	75-2003	.01 Mfd. 400 V. Paper R.F. Amp. Plate Isolation Cond.
C24	76-2002	.00005 Mfd. Mica Oscillator Grid Condenser
C25	75-2005	.1 Mfd. 200 V. Paper 6A8 Cathode Condenser
C26	75-2003	.01 Mfd. 400 V. Paper 6A8 Plate Isolation Cond.
C27	78-2016	50-150 MMFD. First I.F. Primary Trimmer Cond.
C28	78-2016	50-150 MMFD. First I.F. Secondary Trimmer Cond.
C29	75-2005	.1 Mfd. 200 V. Paper First I.F. Cathode By-Pass Cond.
C30	75-2003	.01 Mfd. 400 V. Paper First I.F. Plate Isolation Cond.

CODE	PART NO.	NAME
	COND. (Cont.)	
C31	78-2016	50-150 MMFD. Second I.F. Primary Trimmer Condenser
C32	78-2016	50-150 MMFD. Second I.F. Secondary Trimmer Cond.
C33	75-2003	.01 Mfd. 400 V. Paper High Fidelity Coupling Cond.
C34	75-2005	.1 Mfd. 200 V. Paper Cathode By-Pass Cond.
C35	75-2003	.01 Mfd. 400 V. Paper Plate Isolation Cond.
C36	78-2016	50-150 MMFD. Third I.F. Primary Trimmer Cond.
C37	78-2016	50-150 MMFD. Third I.F. Secondary Trimmer Cond.
C38	76-2001	.0001 Mfd. Mica A.V.C. Coupling Condenser
C39	76-2001	.0001 Mfd. Mica Diode Filter Condenser
C40	76-2001	.0001 Mfd. Mica Diode Filter Condenser
C41	75-2006	.1 Mfd. 200 V. Paper A.V.C. Cathode By-Pass Cond.
C42	76-307	.0005 Mfd. Mica First Audio Plate Filter Cond.
C43	75-2007	.1 Mfd. 400 V. Paper Audio Feed Condenser
C44	75-2003	.01 Mfd. 400 V. Paper Tone Control Cond.
C45	75-2012	.5 Mfd. 400 V. Paper 6F5's Plate Hum Filter Cond.
C45	76-662	.002 Mfd. Mica High Fidelity Condenser
C47	75-2007	.1 Mfd. 400 V. Paper Audio Degeneration Network Cond.
C48	75-2007	.1 Mfd. 400 V. Paper Audio Degeneration Network Cond.
C49	75-2007	.1 Mfd. 400 V. Paper Audio Feed Condenser
C50	75-2008	.2 Mfd. 200 V. Paper Field By-Pass Cond.
C51	18-928	25 Mfd. 25 V. Dry Electrolytic 6F5's Cathode
C52	18-721	8 Mfd. 450 V. Dry Electrolytic Filter Cond.
C53	18-721	8 Mfd. 450 V. Dry Electrolytic Filter Cond.
C54	18-721	8 Mfd. 450 V. Dry Electrolytic Filter Cond.
C55	18-721	8 Mfd. 450 V. Dry Electrolytic Filter Cond.
C56	76-268	.00025 Mfd. Mica Audio Filter Cond.
C57	75-2005	.1 Mfd. 200 V. Paper Audio Feed Cond.
C58	76-2001	.0001 Mfd. Mica Audio Filter Cond.
C59	75-2005	.1 Mfd. 200 V. Paper 6G5 Grid By-Pass Cond.
C60	18-2004	4 Mfd. 450 V. Dry Elect. R.F. & I.F. Soreen Cond.
C61	75-2007	.1 Mfd. 400 V. Paper R.F. & I.F. Soreen By-Pass Cond.
C62	75-2003	.01 Mfd. 400 V. Paper Line By-Pass Cond.
C63	75-2003	.01 Mfd. 400 V. Paper 6G5 Plate By-Pass Cond.
C64	75-2013	1. Mfd. 400 V. Paper B Supply By-Pass Cond.
C65	75-2005	.1 Mfd. 200 V. Paper A.V.C. Network By-Pass Cond.

		INDUCTANCES
L1	17-2095	Foreign Band Oscillator Coil Assembly
L2	17-2119	Police Band Oscillator Coil Assembly
L3	17-2118	Broadcast Oscillator Coil Assembly
L4	37-2003	Wave Trap Assembly
L5	17-2123	Broadcast Antenna Coil Assembly
L6	17-2120	Police Band Antenna Coil Assembly
L7	17-2125	Foreign Band Antenna Coil Assembly
L8	17-2124	Broadcast R.F. Coil Assembly
L9	17-2121	Police Band R.F. Coil Assembly
L10	17-2126	Foreign Band R.F. Coil Assembly
L11	68-2033	First I.F. Transformer Assembly
L12	68-2036	Second I.F. Transformer Assembly
L13	68-2032	Third I.F. Transformer Assembly
L14	64-2033	12" Speaker, 500 Ohm Field, PP 6L6
L15	80-2016	Power Transformer Output Trans.
SW1	66-2009	Rear Panel of Wave Band Switch
SW2	66-2009	Center Panel of Wave Band Switch
SW3	66-2009	Front Panel of Wave Band Switch
SW4		"Off-On" Switch on Volume Control
SW5		High Fidelity Switch on Tone Control
SW6		High Fidelity Switch on Tone Control

FOR ALIGNMENT, SEE INDEX

CHASSIS MODEL 6S12

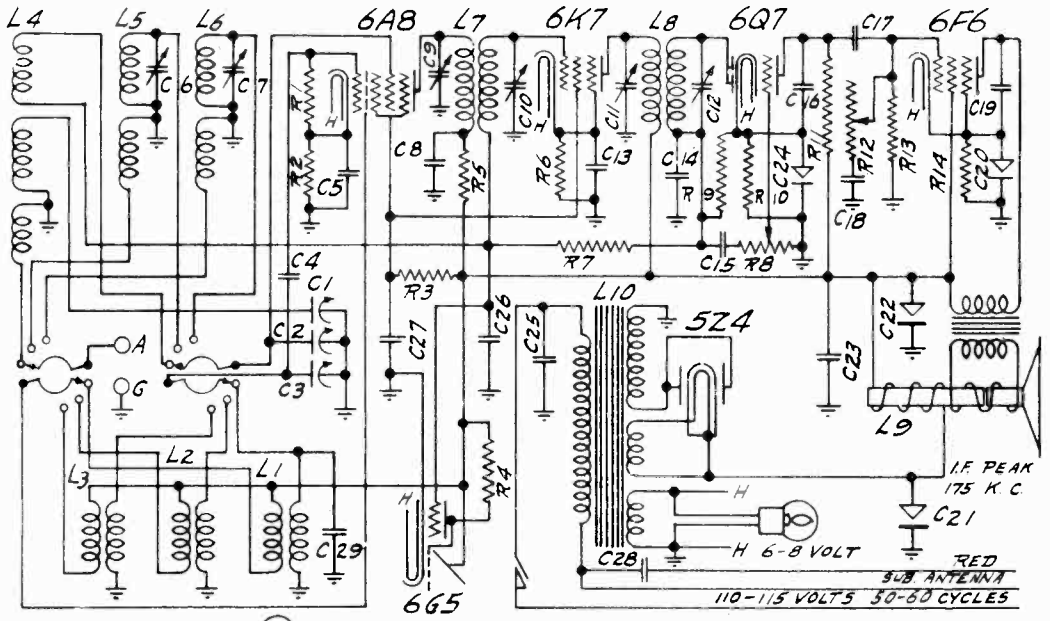


LOCATION OF TRIMMERS

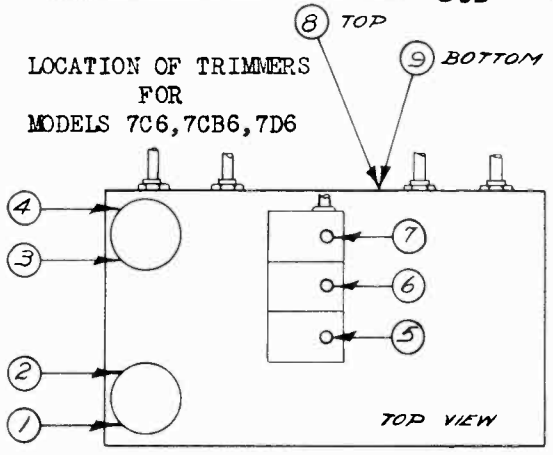
25-2118

CODE	PART NO.	RESISTORS
R1	53-941	20,000 Ohm Osoillator Grid Resistor
R2	53-1062	250 Ohm Oscillator Cathode Resistor
R3	53-898	50,000 Ohm R.F. & I.F. Soreen Resistor
R4	53-926	1 Meg Ohm 6G5 Triode Plate Resistor
R5	53-919	5,000 Ohm 6A8 Plate Isolation Resistor
R6	53-1063	500 Ohm I.F. Cathode Resistor
R7	53-926	1 Meg Ohm A.V.C. Network Resistor
R8	19-1315	500,000 Ohm Volume Control 19-2006 on 7CB6
R9	53-925	500,000 Ohm Diode Load Resistor
R10	53-919	5,000 Ohm 6Q7 Cathode Resistor
R11	53-924	250,000 Ohm 6Q7 Plate Resistor
R12	19-1317	250,000 Ohm Tone Control
R13	53-925	500,000 Ohm 6F6 Grid Resistor
R14	53-1063	500 Ohm 6F6 Cathode Resistor
		INDUCTANCES
L1	17-2111	Broadcast Oscillator Coil Assembly
L2	17-2105	Police Band Oscillator Coil Assembly
L3	17-2127	Foreign Band Oscillator Coil Assembly
L4	17-2100	Broadcast Preselector Coil Assembly
L5	17-2104	Police Band Preselector Coil Assembly
L6	17-2096	Foreign Band Preselector Coil Assembly
L7	68-2026	First I.F. Transformer Assembly
L8	68-2024	Second I.F. Transformer Assembly
L9	64-2030	12" Speaker 1500 Ohm Field 6F6 Trans. for 7C6
L10	80-2017	Power Transformer
L9	64-2022	8" Speaker 1500 Ohm Field 6F6 Trans. for 7CB6
		CONDENSERS
C1	77-833	366 MMFD. Preselector Section of 3 Gang
C2	77-833	366 MMFD. Preselector Section of 3 Gang
C3	77-833	328 MMFD. Oscillator Section of 3 Gang
C4	76-2002	.00005 Mfd. Mica Oscillator Grid Condenser
C5	75-2005	.1 Mfd. 200 Volt Paper 6A8 Cathode Condenser
C6	75-1587	3-30 MMFD. Police Band Preselector Trimmer Cond.
C7	75-1587	3-30 MMFD. Foreign Band Preselector Trimmer Cond.
C8	75-2003	.01 Mfd. 400 V. Paper 6A8 Plate Isolation By-Pass
C9	78-2008	First I.F. Primary Trimmer Condenser
C10	78-2011	First I.F. Secondary Trimmer Condenser
C11	78-2008	Second I.F. Primary Trimmer Condenser
C12	78-2013	Second I.F. Secondary Trimmer Condenser
C13	75-2005	.1 Mfd. 200 V. Paper 6K7 Cathode Condenser
C14	76-307	.0005 Mfd. Diode Filter Condenser
C15	75-2005	.1 Mfd. 200 V. Paper Audio Feed Condenser
C16	76-265	.001 Mfd. Mica 6Q7 Plate Filter Condenser
C17	75-2005	.1 Mfd. 200 Volt Paper Audio Feed Condenser
C18	75-2003	.01 Mfd. 400 V. Tone Control Condenser
C19	75-2001	.002 Mfd. 600 V. Paper 6F6 Plate Filter Cond.
C20	18-928	25 Mfd. 25 V. Dry Electrolytic Condenser
C21	18-2005	12 Mfd. 325 W.V. Electrolytic Condenser
C22	18-2006	16 Mfd. 250 W.V.Electrolytic Condenser
C23	75-2012	.5 Mfd. 400 V. Paper B Supply By-Pass Condenser
C24	18-928	25 Mfd. 25 V. Electrolytic 6Q7 Cathode By-Pass
C25	75-2003	.01 Mfd. 400 V. Paper Line By-Pass Condenser
C26	75-2005	.1 Mfd. 200 V. Paper A.V.C. Network By-Pass Cond.
C27	75-2005	.1 Mfd. 200 V. Paper R.F. & I.F. Soreen By-Pass
C28	75-2003	.01 Mfd. 400 V. Paper Sub. Antenna Condenser
C29	76-2003	.00001 Mfd. Mica Condenser

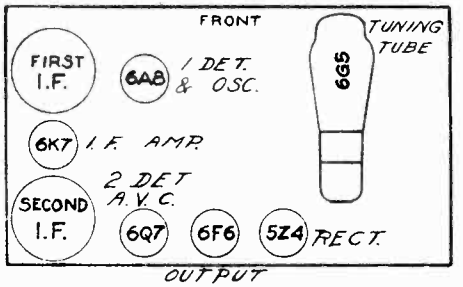
FOR ALIGNMENT SEE INDEX



LOCATION OF TRIMMERS FOR MODELS 7C6, 7CB6, 7D6



LOCATION OF TUBES



FOR USE ONLY WITH

CHASSIS MODELS 110-120 V . 50-60 CYCLE

7C6 7CB6

PILOT LIGHTS 6-8 V.
I. F. PEAK 175 K.C.

TUBE	CIRCUIT	PLATE TO GROUND	SCREEN TO GROUND	CATHODE TO GROUND	2 PL. TO GROUND	2 GRID TO GROUND
6A8	1st DET. & OSC.	230	70	3.4	235	- 25
6K7	I.F. AMPLIFIER	235	70	4		
6Q7	2nd DET. & AVC	75		1.5		
6F6	POWER OUTPUT	225	235		TARGET	
6G5	TUNING	20			230	

B+ VOLTAGE _____ 235

SPEAKER FIELD VOLTAGE _____ 95

METER 1000 OHMS PER VOLT

WILCOX-GAY CORP.

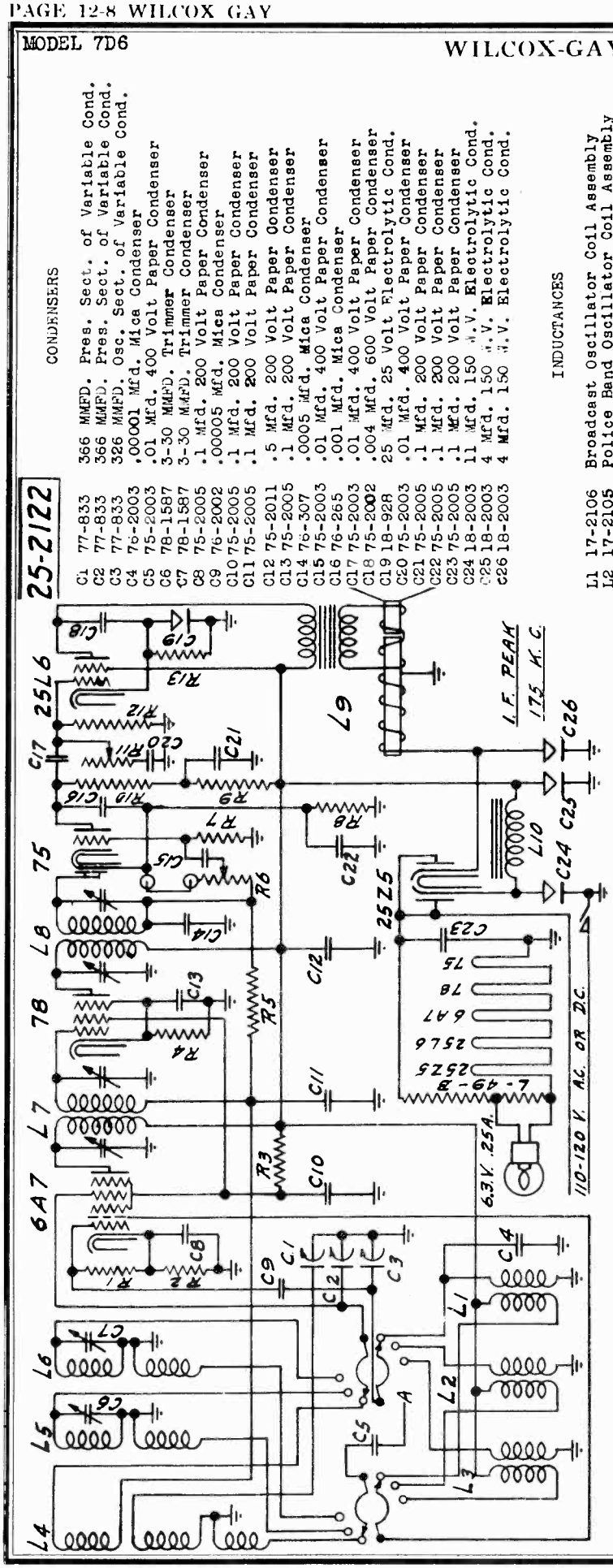
MODELS 7C6, 7CB6

WILCOX GAY PAGE 12-7

MODEL 7D6

WILCOX-GAY CORP.

25-2122



CONDENSERS

C1	77-833	366 MMFD. Pres. Sect. of Variable Cond.
C2	77-833	366 MMFD. Pres. Sect. of Variable Cond.
C3	77-833	326 MMFD. Osc. Sect. of Variable Cond.
C4	76-2003	.00001 Mfd. Mica Condenser
C5	75-2003	.01 Mfd. 400 Volt Paper Condenser
C6	78-1587	3-30 MMFD. Trimmer Condenser
C7	78-1587	3-30 MMFD. Trimmer Condenser
C8	75-2005	.1 Mfd. 200 Volt Paper Condenser
C9	76-2002	.00005 Mfd. Mica Condenser
C10	75-2005	.1 Mfd. 200 Volt Paper Condenser
C11	75-2005	.1 Mfd. 200 Volt Paper Condenser
C12	75-2011	.5 Mfd. 200 Volt Paper Condenser
C13	75-2005	.1 Mfd. 200 Volt Paper Condenser
C14	76-307	.0005 Mfd. Mica Condenser
C15	75-2003	.01 Mfd. 400 Volt Paper Condenser
C16	76-265	.001 Mfd. Mica Condenser
C17	75-2003	.01 Mfd. 400 Volt Paper Condenser
C18	75-2002	.004 Mfd. 600 Volt Paper Condenser
C19	18-928	25 Mfd. 25 Volt Electrolytic Cond.
C20	75-2003	.01 Mfd. 400 Volt Paper Condenser
C21	75-2005	.1 Mfd. 200 Volt Paper Condenser
C22	75-2005	.1 Mfd. 200 Volt Paper Condenser
C23	75-2005	.1 Mfd. 200 Volt Paper Condenser
C24	18-2003	11 Mfd. 150 V.V. Electrolytic Cond.
C25	18-2003	4 Mfd. 150 V.V. Electrolytic Cond.
C26	18-2003	4 Mfd. 150 V.V. Electrolytic Cond.

INDUCTANCES

L1	17-2106	Broadcast Oscillator Coil Assembly
L2	17-2105	Police Band Oscillator Coil Assembly
L3	17-2127	Foreign Band Oscillator Coil Assembly
L4	17-2100	Broadcast Preselector Coil Assembly
L5	17-2104	Police Band Preselector Coil Assembly
L6	17-2096	Foreign Band Preselector Coil Assembly
L7	68-2012	First I.F. Transformer Assembly
L8	68-2024	Second I.F. Transformer Assembly
L9	64-2044	6½" Speaker 3000 Ohm Field 25L6 Trans.
L1014-940		20 Henry Filter Choke

RESISTORS

CODE	PART NO.	
R1	53-941	20,000 Ohm Type M Resistor
R2	53-1062	250 Ohm Wirewound Resistor
R3	53-1042	25,000 Ohm Type M Resistor
R4	53-1063	500 Ohm Wirewound Resistor
R5	53-926	1 Meg Ohm Type M Resistor
R6	19-1315	500,000 Ohm Volume Control
R7	53-925	500,000 Ohm Type M Resistor
R8	53-919	5,000 Ohm Type M Resistor
R9	53-898	50,000 Ohm Type M Resistor
R10	53-924	250,000 Ohm Type M Resistor
R11	19-1317	250,000 Ohm Tone Control
R12	53-925	500,000 Ohm Type M Resistor
R13	53-2014	200 Ohm Type M Resistor

TUBE	CIRCUIT	PLATE TO GROUND	SCREEN TO GROUND	CATHODE TO GROUND	2 PLATE TO GROUND	2 GRID TO GROUND
6A7	1st DET. & OSC.	110	45	1.3	110	- 2.7
78	I.F. AMPLIFIER	110	45	1.6		
75	2nd DET. & AVC	35		0.7		
25L6G	POWER OUTPUT	105	110	10		

B+ VOLTAGE 110
SPEAKER FIELD VOLTAGE 120
METER 1000 OHMS PER VOLT

FOR USE ONLY WITH
110-120 V. 50-60 CYCLE
OR
110-120 V. D. C.

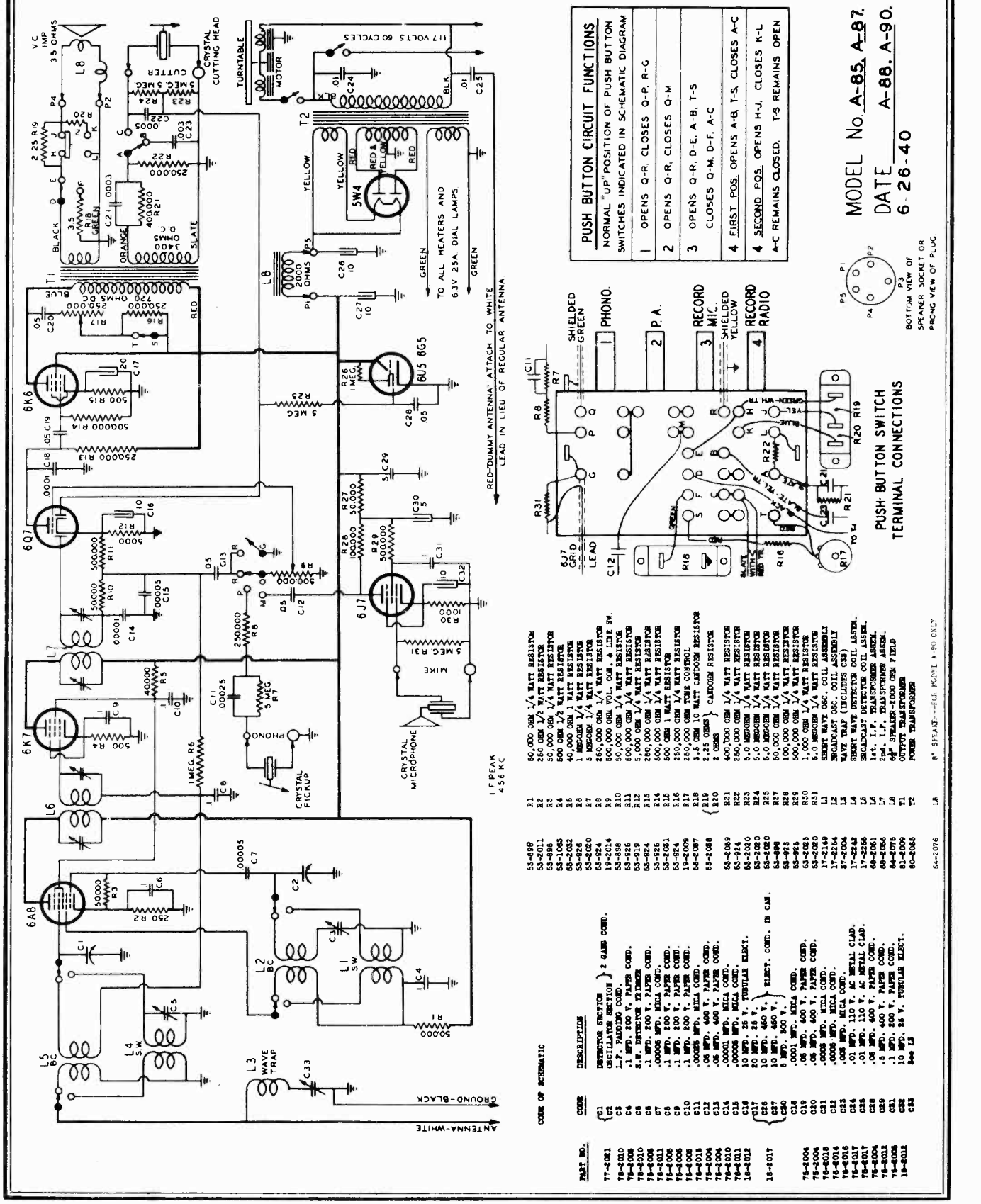
1 F PEAK 175 K C.
PILOT LIGHTS 6.8 V

FOR OTHER DATA
SEE INDEX

CHASSIS MODEL
7D6

WILCOX-GAY CORP.

MODELS A-85, A-87,
A-88, A-90



CODE OF SCHEMATIC

PART NO.	CODE	DESCRIPTION
77-8021	C1	DETECTOR SECTION } 2 GANG COND.
	C2	OSCILLATOR SECTION }
76-8010	C3	L.P. PADDING COND.
76-8006	C4	.1 MFD. 200 V. PAPER COND.
76-8010	C5	S.W. DETECTOR TR TRIMER
76-8006	C6	.1 MFD. 200 V. PAPER COND.
76-8011	C7	.00005 MFD. MICA COND.
76-8006	C8	.1 MFD. 200 V. PAPER COND.
76-8006	C9	.1 MFD. 200 V. PAPER COND.
76-8005	C10	.1 MFD. 200 V. PAPER COND.
76-8013	C11	.00025 MFD. MICA COND.
76-8004	C12	.06 MFD. 400 V. PAPER COND.
76-8004	C13	.06 MFD. 400 V. PAPER COND.
76-8010	C14	.00001 MFD. MICA COND.
76-8011	C15	.00005 MFD. MICA COND.
76-8012	C16	10 MFD. 25 V. TUBULAR ELECT.
	C17	20 MFD. 25 V.
16-8017	C18	10 MFD. 450 V. ELECT. COND. IN CAN.
	C19	10 MFD. 450 V.
	C20	5 MFD. 200 V.
76-8004	C21	.0001 MFD. MICA COND.
76-8004	C22	.06 MFD. 400 V. PAPER COND.
76-8018	C23	.06 MFD. 400 V. PAPER COND.
76-8014	C24	.0005 MFD. MICA COND.
76-8016	C25	.05 MFD. MICA COND.
76-8017	C26	.01 MFD. 110 V. AC METAL CLAD.
76-8017	C27	.01 MFD. 110 V. AC METAL CLAD.
76-8004	C28	.06 MFD. 400 V. PAPER COND.
76-8013	C29	.5 MFD. 400 V. PAPER COND.
76-8008	C30	.1 MFD. 200 V. PAPER COND.
76-8008	C31	.1 MFD. 25 V. TUBULAR ELECT.
18-8013	C32	See L8
	C33	

53-498	R1	50,000 OHM 1/4 WATT RESISTOR
53-2011	R2	250 OHM 1/2 WATT RESISTOR
53-496	R3	50,000 OHM 1/4 WATT RESISTOR
53-1053	R4	500 OHM 1/2 WATT RESISTOR
53-2032	R5	40,000 OHM 1 WATT RESISTOR
53-926	R6	1 MEGOHM 1/4 WATT RESISTOR
53-2020	R7	5 MEGOHM 1/4 WATT RESISTOR
53-924	R8	250,000 OHM 1/4 WATT RESISTOR
19-2014	R9	500,000 OHM VOL. CON. & LINE SW.
53-496	R10	50,000 OHM 1/4 WATT RESISTOR
53-926	R11	500,000 OHM 1/4 WATT RESISTOR
53-919	R12	5,000 OHM 1/4 WATT RESISTOR
53-924	R13	250,000 OHM 1/4 WATT RESISTOR
53-926	R14	500,000 OHM 1/4 WATT RESISTOR
53-2031	R15	800 OHM 1 WATT RESISTOR
53-924	R16	250,000 OHM 1/4 WATT RESISTOR
19-2009	R17	250,000 OHM TONE CONTROL
53-2037	R18	3.5 OHM 10 WATT CARBORUM RESISTOR
53-2038	R19	2.25 OHMS } CARBORUM RESISTOR
	R20	2 OHMS }
53-2039	R21	400,000 OHM 1/4 WATT RESISTOR
53-924	R22	250,000 OHM 1/4 WATT RESISTOR
53-2030	R23	5.0 MEGOHM 1/4 WATT RESISTOR
53-2020	R24	5.0 MEGOHM 1/4 WATT RESISTOR
53-2020	R25	5.0 MEGOHM 1/4 WATT RESISTOR
53-2037	R26	50,000 OHM 10 WATT RESISTOR
53-496	R27	100,000 OHM 1/4 WATT RESISTOR
53-923	R28	500,000 OHM 1/4 WATT RESISTOR
53-926	R29	1,000 OHM 1/4 WATT RESISTOR
53-2023	R30	5.0 MEGOHM 1/4 WATT RESISTOR
53-2020	R31	SHORT WAVE OSC. COIL ASSEMBLY
17-2154	L1	BROADCAST OSC. COIL ASSEMBLY
17-2004	L2	WAVE TRAP (INCLUDES C34)
17-2242	L3	SHORT WAVE DETECTOR COIL ASSM.
17-2238	L4	BROADCAST DETECTOR COIL ASSM.
58-2061	L5	1st. I.F. TRANSFORMER ASSM.
58-2066	L6	2nd. I.F. TRANSFORMER ASSM.
54-2076	L7	6½ SPEAKER-2000 OHM FIELD
81-2009	T1	OUTPUT TRANSFORMER
80-2035	T2	POWER TRANSFORMER
54-2076	LS	8" SPEAKER---FOR MODEL A-90 ONLY

GANGING INSTRUCTIONS

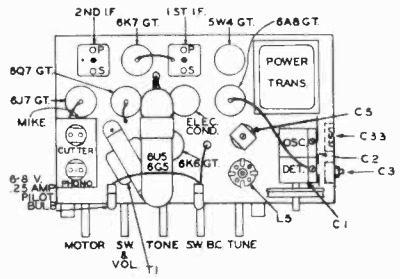
An OUTPUT METER or other indicating device should be used for accuracy in making ganging adjustments.

If an output meter is not available, the magic eye (6U5) may be used as an output indicator as follows:

(a) Depress push-button No. 4 "To Record Radio"

(b) Disconnect cutting-head from chassis.

(c) Adjust volume control to near maximum.



Connect signal generator to control grid of the 6A8 tube.

SIGNAL GENERATOR FREQUENCY	DIAL POSITION	WAVE BAND SWITCH POSITION	TRIMMER NUMBER
456 K.C.	1500 K.C.	Broadcast	2nd. I.F.--S
" "	" "	"	" " P
" "	" "	"	1st. I.F.--S
" "	" "	"	" " P
" "	550 K.C.	"	C-33 *

Connect signal generator to ANT. and GND. leads.

Turn condenser gang to full maximum capacity and check position of dial pointer with reference line on the scale, which is the last graduation below the 550 K.C. calibration.

600 K.C.	600 K.C.	Broadcast	L.F.Pad (C-3)
1400 K.C.	1400 K.C.	"	Osc.(C-2)
" "	" "	"	Det.(C-1)
Not used **	15-16 M.C.	Short Wave	Ant.(C-5)

The entire alignment procedure should be repeated to obtain greatest accuracy in the adjustment of the trimming condensers.

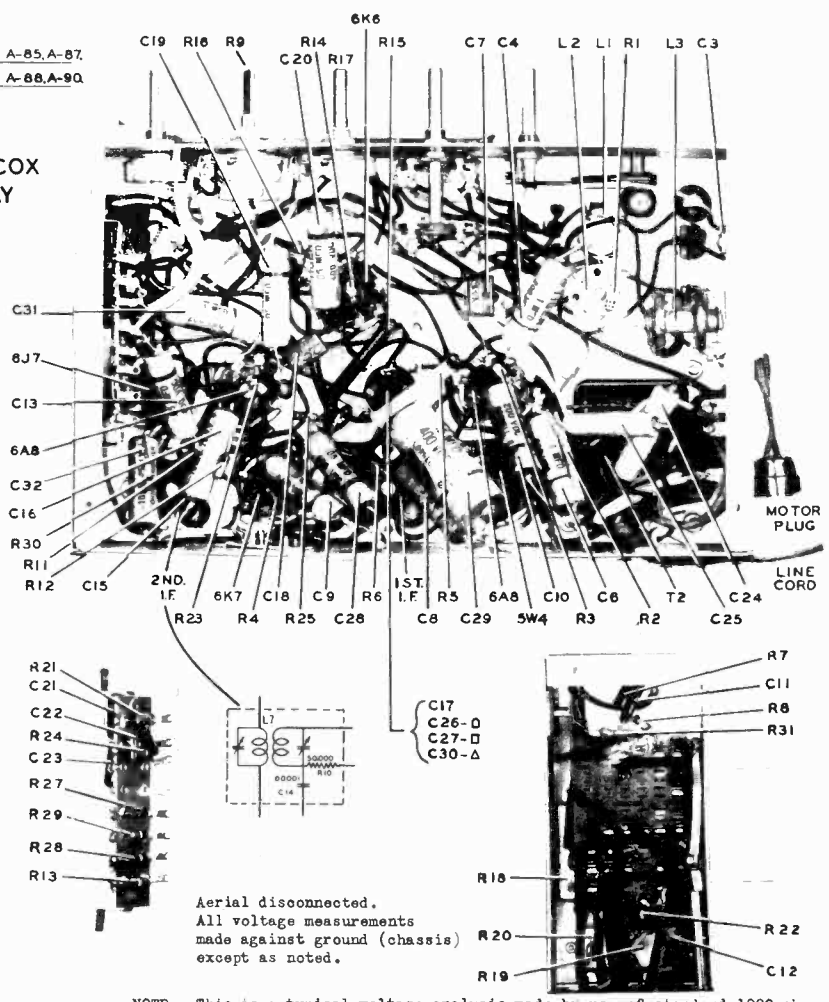
* Adjust C-33 trimmer for MINIMUM signal.

** Connect antenna to receiver, and adjust dial so that no station is received. Advance volume control until a fair volume of noise is received. Adjust trimmer for greatest noise.

Tube	Position	VOLTAGE Plate	Screen	Cathode
6A8	1st. Det. Osc.	230	75	2.2
6K7	I.F.	230	75	3.0
6Q7	2nd. Det.	90*		1.5
6J7	Mike Amp.	45 to 65*	30*	.8
6K6	Output	215	235	13.5

MODEL No. A-85,A-87,
DATE A-88,A-90
6-26-40

WILCOX GAY



Aerial disconnected.
All voltage measurements made against ground (chassis) except as noted.

Line Voltage----------118
P5 or C26 to GND.-------350
P1 or C27 to GND.-------240
P5 to P1 (sp'kr field)--110
C30 to GND.------------150

NOTE: This is a typical voltage analysis made by use of standard 1000 ohm per volt voltmeter, using the 300 volt scale for plate and screen voltage readings.

* Not actual voltages due to large values of resistance in circuit between supply voltage and point of measurement. These voltage values may vary considerably, depending upon the resistance of voltmeter used.

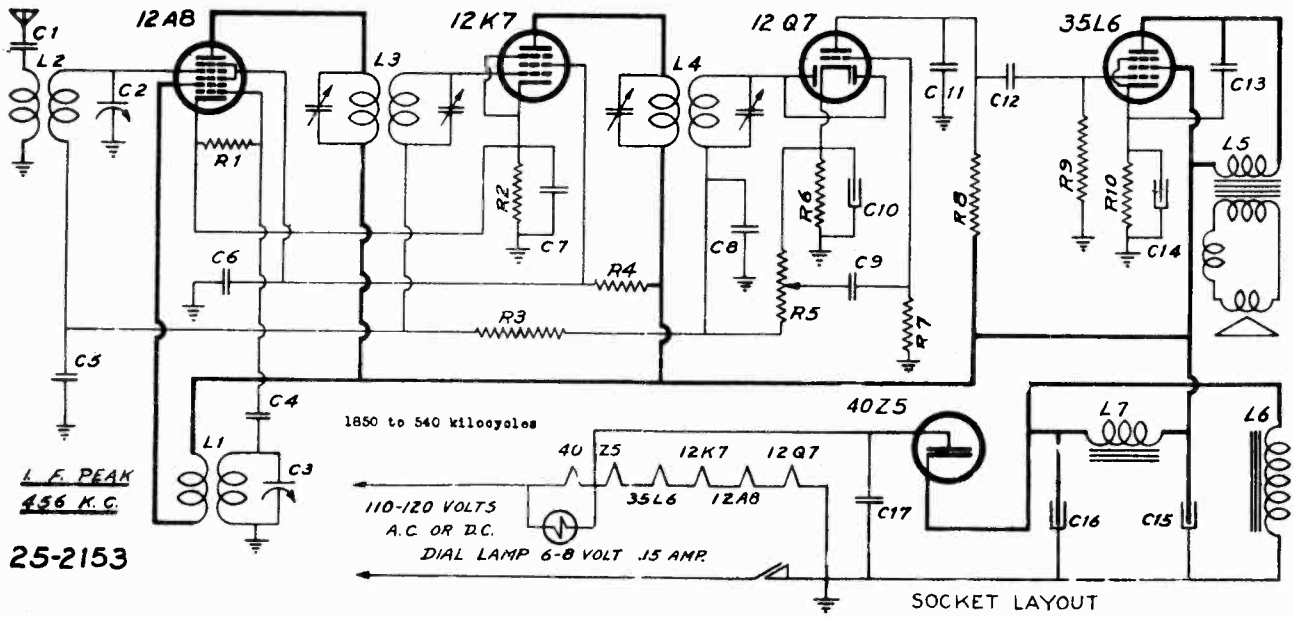
The above voltages should be considered as being approximate, as difference in line voltage, type of testing equipment used, normal tolerance limits of component parts in the chassis, all have an effect upon these readings. A tolerance of 10% is usually considered permissible.

MODEL A-53 (1939)
"Thin Man"

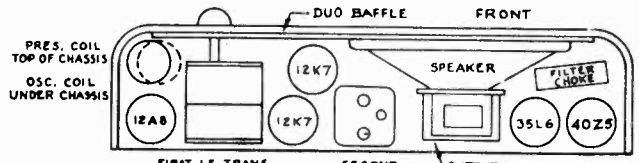
WILCOX-GAY CORP.

MODELS 8K2, A-56, A-60
Record-Player

SCHEMATIC DIAGRAM CHASSIS MODEL 9C5



SOCKET LAYOUT



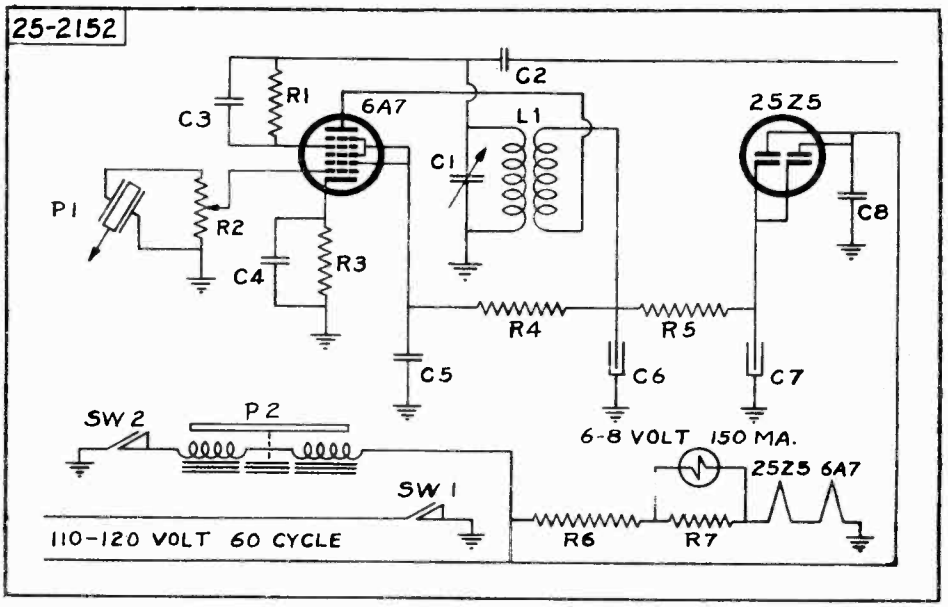
MODEL A-53
"THIN MAN"
1939

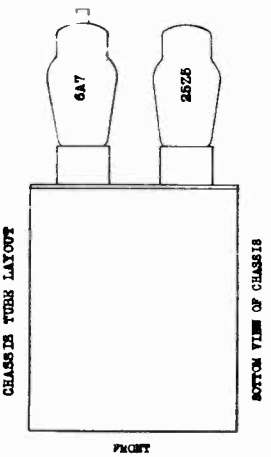
R1	53-898	50,000 Ohm 1/4 Watt Resistor
R2	53-1062	250 Ohm 1/2 Watt Resistor
R3	53-926	1 Meg Ohm 1/4 Watt Resistor
R4	53-1042	25,000 Ohm 1/4 Watt Resistor
R5	19-2012	500,000 Ohm Volume Cont. & Switch
R6	53-919	5,000 Ohm 1/4 Watt Resistor
R7	53-928	500,000 Ohm 1/4 Watt Resistor
R8	53-924	250,000 Ohm 1/4 Watt Resistor
R9	53-928	500,000 Ohm 1/4 Watt Resistor
R10	53-2014	200 Ohm 1/4 Watt Resistor

C1	75-2003	.01 Mfd 400 V. Paper Cond.
C2, C3	77-2015	Two Gang Variable Condenser
C4	76-2002	.00005 Mfd Mica Condenser
C5	75-2005	.1 Mfd 200 V. Paper Cond.
C6	75-2005	.1 Mfd 200 V. Paper Cond.
C7	75-2005	.1 Mfd 200 V. Paper Cond.
C8	76-307	.0005 Mfd Mica Condenser
C9	75-2003	.01 Mfd 400 V. Paper Cond.
C10	18-2012	10 Mfd 25 W. V. Dry Elect. Cond.
C11	75-2014	.001 Mfd 600 V. Paper Cond.
C12	75-2003	.01 Mfd 400 V. Paper Cond.
C13	75-2001	.002 Mfd 600 V. Paper Cond.
C14	18-2012	10 Mfd 25 W.V. Dry Elect. Cond.
C15	18-2011	8 Mfd 150 W.V. Dry Elect. Cond.
C16	18-2010	16 Mfd 150 W.V. Dry Elect. Cond.
C17	75-2005	.1 Mfd 200 V. Paper Condenser

L1	17-2232	Oscillator Coil Assembly
L2	17-2230	Preselector Coil Assembly
L3	68-2056	First I.F. Trans. Assembly
L4	68-2052	Second I.F. Trans. Assembly
L5	64-2043	5" Speaker, Output Trans. for 35L6 Tube
L6	64-2043	3000 Ohm Field on L5
L7	14-2002	18 Henry Filter Choke

86-2207

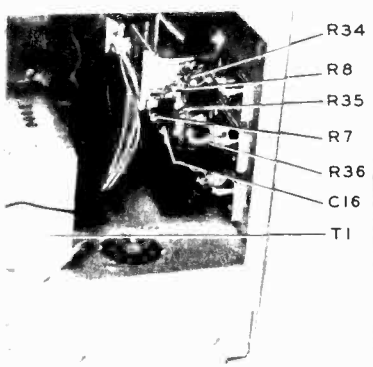


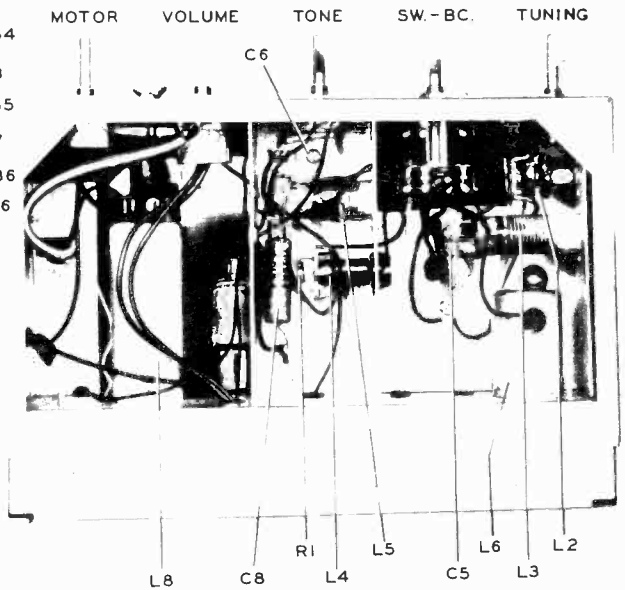


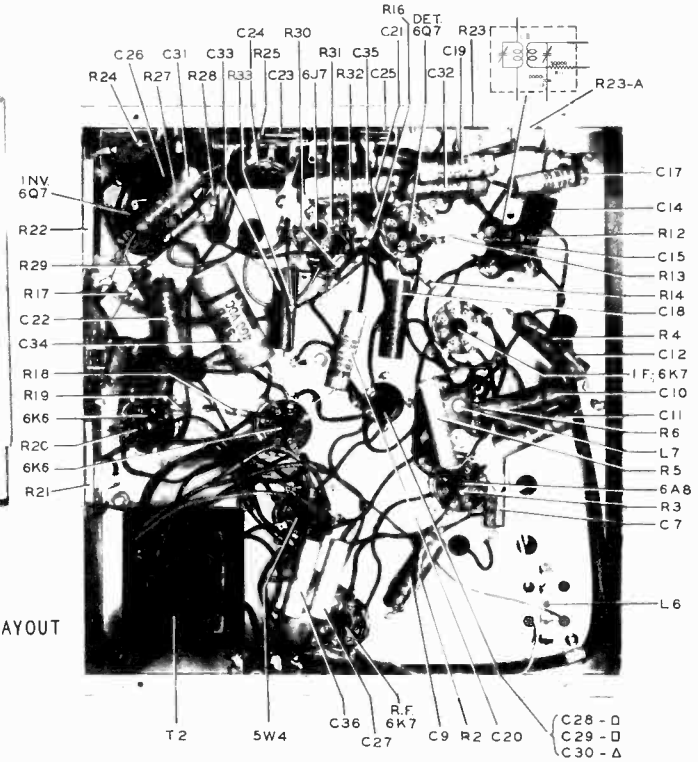
MODELS A-56, A-60 & 8K2

CODE	PART NO.	NAME
L1	17-2223	Coil Assembly, Oscillator
C1	78-2034	Condenser, Trimmer, 40-240 Mmfd.
C2	76-2003	Condenser, Mica, .00001 Mfd.
C3	76-2002	Condenser, Mica, .00005 Mfd.
C4	75-2005	Condenser, Paper, .1 Mfd. 200 Volt
C5	75-2005	Condenser, Paper, .1 Mfd. 200 Volt
C6	18-2011	Condenser, Electrolytic, 8 Mfd. 150 W.V.
C7	18-2010	Condenser, Electrolytic, 16 Mfd. 150 W.V.
C8	75-2005	Condenser, Paper, .1 Mfd. 200 Volt
P1	52-2080	Phono Pick-up Arm Assembly
P2	52-2081	Phono Motor Assembly, 60 Cycle AC 110-120 Volt with 9" Turn Table
	45-349	Lamp, Pilot Mazda
R1	53-920	Resistor, 10,000 Ohm 1/4 Watt
R2	19-2013	Volume Control
R3	53-2023	Resistor, 1,000 Ohm 1/4 Watt
R4	53-919	Resistor, 5,000 Ohm 1/4 Watt
R5	53-919	Resistor, 5,000 Ohm 1/4 Watt
R6	53-2021	Resistor, 278 Ohm 25 Watt
R7	53-2021	Resistor, 26 Ohm 2.34 Watt
SW1		Switch, Line "Off-On" (On R2)
SW2	66-2023	Switch, Motor "Off-On"

86-2204







VOLTAGE DATA

Line Voltage----115
C28 to GND.-----360
C29 to GND.-----250
C30 to GND.-----175
Speaker Field---110

Aerial disconnected.
Volume control at minimum.
All voltage measurements made against ground (chassis) except as noted.

MODEL No. A89, A91, A92, A93, A94
DATE 11-27-40.

PARTS LAYOUT

Tube	Position	Plate	Screen	Cathode
6K7	R.F.	250	83	2.8
6A8	1st. Det.	250	83	2.8
	Osc.	112		
6K7	I.F.	250	83	3.3
6Q7	2nd. Det.	80*	--	1.5
6Q7	Inverter	85*	--	1.5
6J7	Mike Amp.	40 to 65*	35*	1.1
6K6	Output	245	250	17.0

NOTE: This is a typical voltage analysis made by use of standard 1000 ohm per volt voltmeter, using the 300 volt scale for plate and screen voltage readings.

* Not actual voltages due to large values of resistance in circuit between supply voltage and point of measurement. These voltage values may vary considerably, depending upon the resistance of voltmeter used.

The above voltages should be considered as being approximate, as difference in line voltage, type of testing equipment used, normal tolerance limits of component parts in the chassis, all have an effect upon these readings. A tolerance of 10% is usually considered permissible.

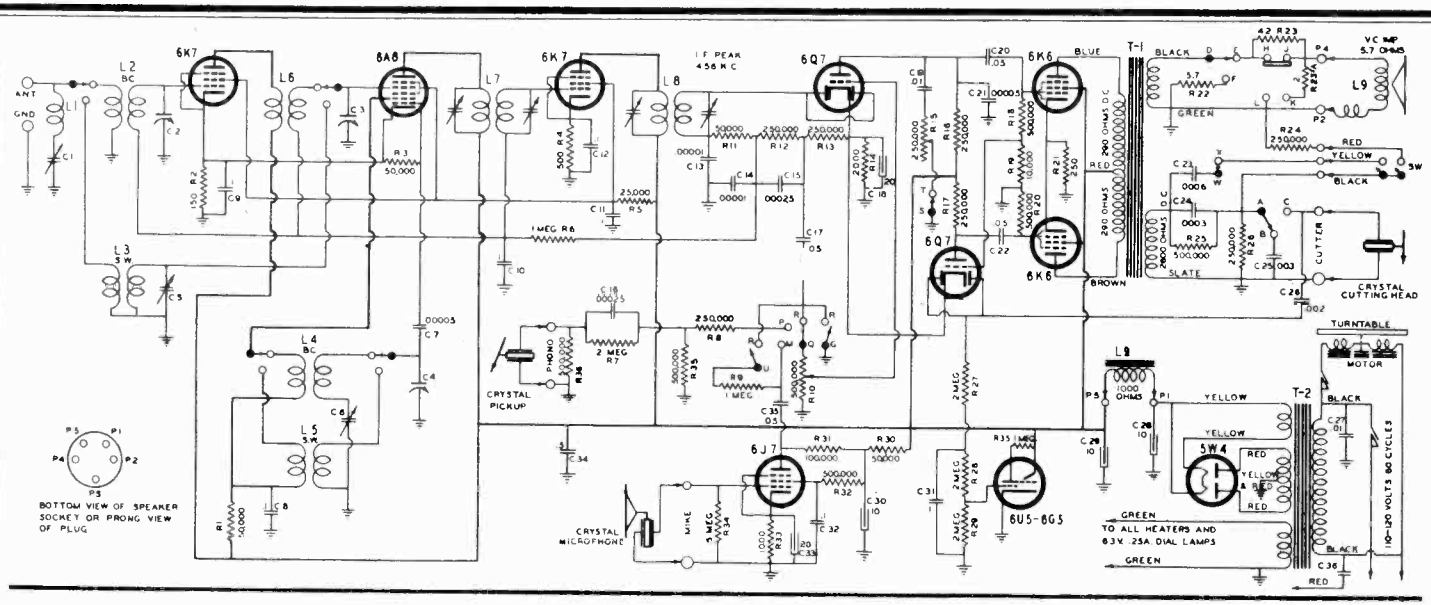
MODELS A-89, A-91, A-92, A-93, A-94, A-101.

CORRECTION FOR HIGH HUM LEVEL

In the operation of Recordio Models A-89, A-91, A-92, A-93, A-94 and A-101, bearing serial numbers prior to No. 624060, if the residual hum, noted with the volume control turned to minimum position, appears to be abnormally high or objectionable, a correction may be effected by a rearrangement of the ground connections to the volume control and cathode by-pass condenser C18.

These connections should be changed as follows:

1. Disconnect the spiral shield covering of the volume control leads, from the volume control terminal and solder the shielding directly to the volume control switch cover.
2. Remove the wire placed through the rubber grommet in the vertical shield fin, which connects the ground terminal of the volume control to chassis.
3. Run a wire from the ground terminal of the volume control through the fibre grommet in the chassis base directly below the volume control, to the ground lug located near the electrolytic condenser in the approximate center of the underside of the chassis. (Note: R33 and C33 are already connected to this lug.) Do not permit the volume control ground terminal to contact the chassis through any other medium.
4. Move the ground connection of the 6Q7 cathode by-pass condenser, C18, from its present location on the assembly lug of the electrolytic condenser, to the chassis ground lug to which the volume control has been grounded.



SCHEMATIC DIAGRAM

A-89

MODEL No. A-91 A-92

DATE____ A-93 A-94

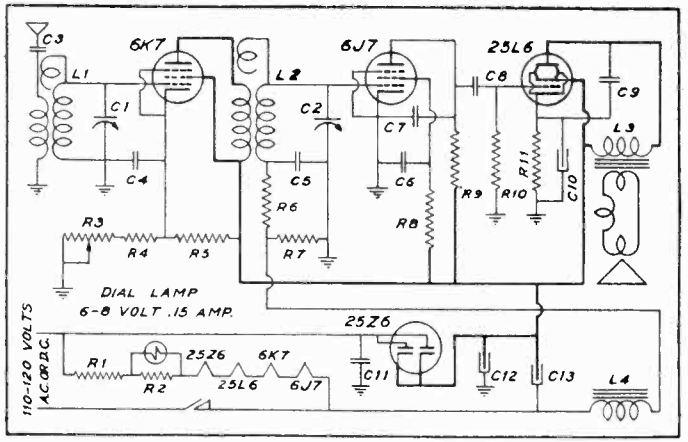
10-22-40

EQUALIZER SWITCH POSITIONS

REFER TO "SW" IN DIAGRAM

SPEED SHIFT LEVER	EQUALIZER SWITCH
SLOW	CLOSED
FAST	OPEN

This receiver is designed for operation on 110-120 volts AC or DC

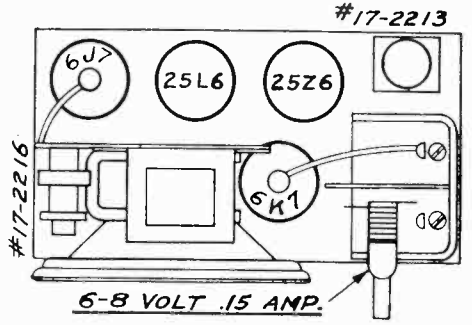


Code	Part No.	Description
K1	20-2010	175 Ohm Resis. in Power Cord
R2	53-2018	26 Ohm 2.34 Watt Resistor
R3	19-2011	15,000 Ohm Vol. Cont. & Switch
R4	53-2014	200 Ohm ¼ Watt Resistor
R5	53-1042	25,000 Ohm ¼ Watt Resistor
R6	53-926	1 Meg Ohm ¼ Watt Resistor
R7	53-2017	20 Ohm ½ Watt Resistor
R8	53-2020	5 Meg Ohm ¼ Watt Resistor
R9	53-925	500,000 Ohm ¼ Watt Resistor
R10	53-925	500,000 Ohm ¼ Watt Resistor
R11	53-1061	150 Ohm ½ Watt Resistor
C1, C2	77-2013	Two Gang Variable Cond.
C3	75-2001	.002 Mfd. 600 V. Paper Cond.
C4	75-2005	.1 Mfd. 200 V. Paper Cond.
C5	75-2005	.1 Mfd. 200 V. Paper Cond.
C6	75-2003	.01 Mfd. 400 V. Paper Cond.
C7	75-2014	.001 Mfd. 600 V. Paper Cond.
C8	75-2003	.01 Mfd. 400 V. Paper Cond.
C9	75-2001	.002 Mfd. 600 V. Paper Cond.
C10	18-2012	10 Mfd. 25 W.V. Elect. Cond.
C11	75-2005	.1 Mfd. 200 V. Paper Cond.
C12	18-2011	8 Mfd. 150 W.V. Elect. Cond.
C13	18-2010	16 Mfd. 150 W.V. Elect. Cond.
L1	17-2213	Antenna Coil Assembly
L2	17-2216	Detector Coil Assembly
L3	81-2004	Output Trans. for 25L6 Tube
L4	64-2056	4" Speaker 450 Ohm Field

Model

8C4 A51

R. F. Amplifier	1	#6K7
Detector Tube	1	#6J7
Output Tube	1	#25L6
Rectifier Tube	1	#25Z6



TUBE	CIRCUIT	PLATE TO GROUND	SCREEN TO GROUND	CATHODE TO GROUND
6K7	R. F. Amplifier	108	108	2.8
6J7	Detector	24	.2	0
25L6	Power Output	100	108	6.2

Speaker Field Drop 22 — B + Voltage 108

Line Voltage Was 120 V. 60 cycle — Meter 1000 ohms per volt

WILCOX-GAY CORP.

MODELS A-51, 8C4
MODELS A-89, A-91, A-92
A-93, A-94

MODEL No. A89-A91
DATE 8-22-40. A92, A93, A94

GANGING INSTRUCTIONS

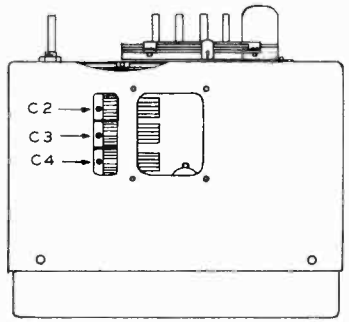


FIG. 11

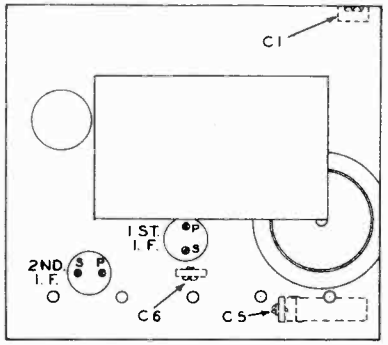
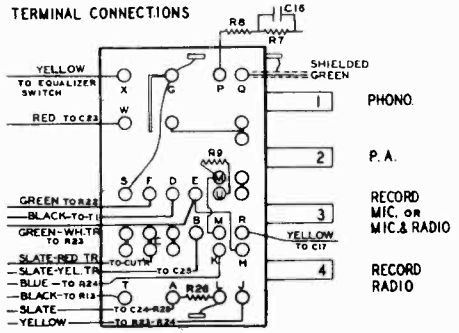


FIG. 12

PUSH BUTTON SWITCH TERMINAL CONNECTIONS



PUSH BUTTON CIRCUIT FUNCTIONS NORMAL "UP" POSITION OF PUSH BUTTON SWITCHES INDICATED IN SCHEMATIC DIAGRAM	
1	OPENS Q-R, W-X. CLOSES Q-P, R-G
2	OPENS Q-R. CLOSES Q-M
3	FIRST POS. OPENS A-B, T-S. CLOSES U-R SECOND POS. OPENS Q-R, A-B, D-E, T-S CLOSES Q-M, A-C, D-F
4	FIRST POS. OPENS A-B, T-S. CLOSES A-C SECOND POS. OPENS A-B, T-S, H-J CLOSES A-C, K-L
NOTE - ALL OTHER CONTACT POSITIONS INDICATED IN DIAGRAM	

An OUTPUT METER or other indicating device should be used for accuracy in making ganging adjustments. If an output meter is not available, the magic eye (6U5) may be used as an output indicator as follows:

(a) Depress push-button No. 4 "To Record Radio".
(b) Disconnect cutting head from chassis.
(c) Adjust volume control to near maximum.

Connect signal generator to control grid of 6A8 tube. Make connection to side of middle section, (C3) of condenser gang. (FIG. 11)

SIGNAL GENERATOR FREQUENCY	DIAL POSITION	WAVE BAND SWITCH POSITION	TRIMMER NUMBER	FIGURE NUMBER
456 K.C.	1500 K.C.	Broadcast	2nd I.F.-S	12
" "	" "	"	" " -P	12
" "	" "	"	1st I.F.-S	12
" "	" "	"	" " -P	12
Connect signal generator to ANT. and GND. terminals.				
456 K.C.	550 K.C.	Broadcast	Wave Trap (C-1)*	12
600 K.C.	600 K.C.	"	L.F. Pad. (C-6)**	12
1400 K.C.	1400 K.C.	"	Osc. (C-4)	11
1400 K.C.	1400 K.C.	"	Det. (C-3)	11
1400 K.C.	1400 K.C.	"	R.F. (C-2)	11
Not Used***	15-16 M.C.	Short Wave	Pre-Sel. (C-5)	12

As resonance is approached by adjustment of the trimmers, the signal generator attenuator should be adjusted for a minimum signal that will provide a low reading on the output indicator.

It is advisable to repeat the entire alignment procedure to correct the slight effect one adjustment may have upon the other.

* Adjust C-1 for MINIMUM signal.

** First note the position of the dial pointer with the condenser gang turned to full maximum capacity. The left edge of the pointer should be slightly to the right of the last dial graduation.

In adjusting the L.F. Pad. (C-6) rock the condenser gang back and forth across the 600 K.C. signal and note that maximum output meter reading coincides with the 600 K.C. dial graduation. If the dial reading is other than 600 K.C., reset the dial pointer on the dial cord, to read 600 K.C. at maximum output meter indication.

*** Connect antenna to receiver, and adjust dial so that no station is received. Advance volume control until a fair volume of noise is received. Adjust trimmer C-5 for greatest noise.

MODEL No. A93-A94

TURNTABLE SPEED VARIATION

In order to satisfactorily correct any variation in the speed of the turntable, which is usually evidenced by "wow" or a waver in the pitch of musical tones during the playing of records or home recordings, it is first necessary to determine the kind of speed variation encountered.

As the various types of turntable speed variation usually fall under two distinct classifications--INTERMITTENT VARIATION and VARIATION SYNCHRONIZED WITH TURNTABLE ROTATION, the matter of diagnosis in any particular case of trouble is simplified.

Intermittent Variation

It is important that the rubber rimmed intermediate drive wheels be kept clean and free from oil, to avoid slipping or irregular operation of the wheels. The drive wheel bearings are of Oilite Bronze and require no oiling to prevent wear, however, ONE drop of light lubricating oil may be applied to each drive wheel bearing if desired to "quiet" their operation.

All record shavings and other dirt particles that may have gotten under the turntable should be removed, as such foreign material may seriously interfere with the smooth operation of the mechanism.

If the drive wheels appear to slip, although the rubber rims and the turntable rim are free from oil, the tension of the drive wheel tension spring should be increased.

The round movable disc on which the dual drive wheel assembly is mounted, should be adjusted to a degree of tightness that affords minimum looseness of the assembly, at the same time maintaining entire freedom of movement. If the drive wheel assembly is allowed to tip while in motion, resulting in the drive wheels rotating out of the horizontal plane, the rim of the top wheel may ride high and intermittently touch the underneath side of the turntable.

The wire leads connected to the cutting head inside the recording arm should not be permitted to drag on the record or turntable, as this produces an intermittent braking effect causing the turntable to be slowed down, or to rotate with varying speed. Intermittent variation in turntable speed may also be due to a binding of the lateral feed screw bearing. An adjustment is provided on the gear housing of the feed screw assembly, to take up end play in the feed screw. When this adjustment is correctly made, only a very slight amount of end play should be perceptible, however, it should be determined that this end play exists throughout the complete rotation of the feed screw.

CONTINUED ON NEXT PAGE

Variation Synchronized With Turntable Rotation

If "wow" resulting from variation in the speed of the turntable is evidenced to be in the order of four times per turntable revolution, this would indicate a defect in the rubber rimmed drive wheel. The wheel may be out of round, or warped, or may have a flat spot or bump on the rubber rim.

If the "wow" is noticed to be once per turntable revolution, however, this would indicate some irregularity in the rim of the turntable. In handling, avoid bumping or dropping the turntable, as any pronounced dent in the rim of the table to throw it out of round will result in a very noticeable variation in turntable speed.

Running the finger tips lightly over the inside surface of the turntable rim will show up any irregularity sufficiently pronounced to produce "wow" in the recording or record reproduction. The bearing surface of the turntable rim does not necessarily have to be perfectly smooth, as the effect of minute irregularities of the surface are absorbed by the rubber rim of the drive wheel.

A badly warped record, either a home recording or commercial record, or one in which the center hole is worn or oversize, will tend to produce "wow" during its reproduction, and it is suggested that this be taken into consideration in investigating a complaint pertaining to waver or "wow" in record reproduction.

Ordinarily, recordings made on record blanks which are only slightly warped, will prove to be satisfactory. However, "wows" may be cut into the recording if the cutting head damper is incorrectly adjusted so that the felt damper bears against the cutting head with too much pressure.

To correctly adjust the Cutting Head Damper, proceed as follows:

1. Turn the adjusting screw to the RIGHT so that no pressure is exerted on the cutting head by the felt damper.

2. Raise the recording arm to a near vertical position so that the stylus screw is midway in the slot in the front end of the arm. Observe that when the stylus screw is moved to one end of the slot and released, it will move back and forth a few times, before coming to rest in the center of the slot.

3. Turn the damper adjusting screw to the LEFT until, when the stylus screw is moved to one end of the slot and released, it will return to a midway position and stop. The tendency to continue moving back and forth has been eliminated.

In order to determine if "wow" is actually "cut" into a home recording, or if a variation in turntable speed exists during all functions of the turntable, first play an especially selected regular phonograph record, known to be entirely free from "wow". If the record plays satisfactorily, but "wow" is noticed in playing home recordings made on the same instrument, this gives evidence of the existence of some mechanical fault in the recording mechanism. As previously pointed out, the cutting head leads may be dragging on the record or turntable, during recording, or the rubber rimmed drive wheel may slip at the point of contact with the motor pulley or the turntable rim. Although the drive wheel tension may be sufficient to provide unvarying speed of the turntable during the playing of records, the greater power demand placed upon the power source during recording, due to the work involved in cutting the record groove, may cause the drive wheel to slip.

MOTORS

Dynamic Balance

All Recordio motors employed in dual-speed models are now dynamically balanced by the motor manufacturer, and such motors have an identifying red dot on the bottom of the motor rotor. Thorough investigation indicates that the use of dynamically balanced motors eliminates all possibility of recorded flutter due to motor vibration. Prior to the use of dynamically balanced motors, all motors were passed through a very rigid vibration test to insure satisfactory performance from this standpoint.

Motor Shaft Sticks

In some of the early production units, sufficient vertical end play in the motor shaft existed to allow the lower end of the shaft to enter the motor bearing if the unit were subjected to rough handling during transportation. This sometimes caused the shaft to stick in the bearing, resulting in failure of the motor to operate when turned on. In the event a tight shaft is encountered, it may be freed in the bearing by lightly tapping the end of the motor shaft.

In motors of more recent production, a fibre washer is placed on the motor shaft to take up a sufficient amount of end play so that the shaft cannot become stuck in the bearing.

Oiling

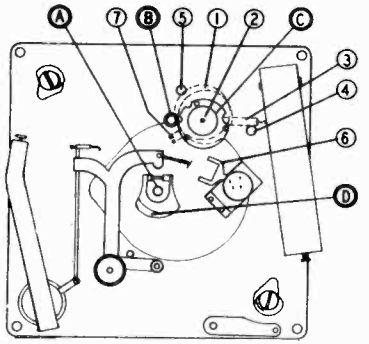
When the RECORDIO leaves the factory, the equipment is properly lubricated and requires no immediate attention.

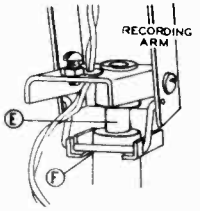
Frequent oiling of the recording mechanism is not required, although the use of a small amount of oil judiciously applied about once a year, in accord with the following directions, will suffice to maintain the equipment in good order.

Remove the turntable by applying upward pressure at the rim of the table, at the same time lightly tapping the top of the turntable spindle with a small tool.

Lift the dual drive wheel assembly from its mounting.

Lubricate the oiling positions indicated in the accompanying drawings, using only two or three drops of electric motor oil at each position, unless otherwise specified.





A. Turntable shaft bearing.

B. Upper motor bearing.

C. Between drive wheel mounting disc and bed plate.

D. Place a coating of petroleum jelly on the lip of the master cam.

E. Recording arm pivot post.

F. Pivot post straddle plate slot.

Carefully apply one or two drops of oil to each drive wheel bearing, so that the oil will not run out on to the rubber rims of the wheels.

The lower motor bearing may be lubricated by application of oil to the felt wick surrounding the lower end of the motor shaft.

Replace dual drive wheel and turntable as follows:

Place the dual drive wheel assembly (1) on the pin in the center of the movable mounting plate (2). The shift lever (3) of the wheel assembly should be positioned against the stop pin (4) as shown in the drawing. Likewise, the switch arm (6) should be positioned as shown so that the switch actuating finger (7) will engage in the wide slot of the switch arm (6) as the shift lever (3) is moved between the stop pins (4) and (5).

Place the shift lever (3) against stop pin (5) so that the switch arm (6) is moved to the position opposite that shown in the drawing.

Carefully lower the turntable on the spindle. It will be observed that one of the rubber rimmed drive wheels protrudes beyond the rim of the turntable. With the finger tips, press the drive wheel into position so that the rubber rim of the wheel bears against the inside surface of the turntable rim.

Rotate the turntable by hand, permitting the key pin of the turntable spindle to engage the key slot in the turntable hub.

AUTOMATIC RECORD CHANGER ADJUSTMENTS

MODEL No. A93,A94,A96.

DESCRIPTION OF TRIP MECHANISM

(1) In order to automatically change records, the record changer mechanism must first be put in motion. The trigger which accomplishes this purpose is the trip mechanism. The trip mechanism is actuated by the trip grooves at the end of the music grooves in all standard records.

(2) All commercial records manufactured in recent years have either an eccentric (oscillating), or spiral (run-in) type of trip groove.

(3) This record changer will trip on any standard eccentric trip groove. It will also trip on any spiral trip groove provided that the spiral does not terminate at a larger diameter than that for which the trip mechanism is adjusted.

(4) To observe the operation of the trip mechanism, it is necessary to first remove the turntable and then move lever (A) to either the 10 or 12 inch position.

(5) To follow the action of the trip mechanism on eccentric trip groove records, it will be seen that as the pickup arm (M) swings inwardly, the trip rod (K) moves toward the pickup base until the serrations on the trip rod seen at (K) are in contact with the knife edge of the trip latch (X). If the pickup arm (M) is now moved outwardly, the serrations at (K) will engage with the trip latch (X) permitting the trip cam lift lever (C) to be released so that it will drop in and engage the trip cam (P).

(6) To observe the action of the trip mechanism on spiral trip groove records, swing the pickup arm (M) inwardly until the trip dog (G) comes in contact with the trip latch (X) and releases trip cam lift lever (C).

(7) The reject button (R) it will be noted also operates to trip the mechanism by imparting motion to latch (X).

(8) After trip cam lift lever (C) has been released so that it can engage trip cam (P) the forces required to operate the balance of the trip mechanism are derived from the motor.

(S) As trip cam (P) engages trip cam lift lever (C), cam (P) is hinged upwards so that it engages the change mechanism drive wheel control lever (I) and forces the drive wheel (L) into positive frictional engagement with the inside of the turntable rim.

(10) To keep wheel (L) in engagement with the turntable rim after lever (I) carries past cam (P), lever (I) is engaged by latch (Y) and the tripping operation is complete.

DESCRIPTION OF SPEED REDUCER AND CAM SHAFT

(11) Driven by the wheel (L) through a double worm and gear reduction, the cam shaft (S) carries cams which control the pickup arm movements, the dropping of records, and at the conclusion of the change cycle, the release of latch (Y).

(12) Cam (T) which is mounted on the lower end of cam shaft (S) raises and lowers the pickup arm (M) through a rocker arm and push rod.

(13) The positioning of the pickup arm (M) for 10 or 12 inch records is controlled by two cams just above the lower cam shaft bearing. The lower of these cams (with short throw) positions the pickup for 12 inch records and the upper cam (with long throw) positions the pickup for 10 inch records.

(14) An examination of the pickup positioning cams will reveal spring fingers at the termination of the cam rise. These spring fingers are provided to urge the pickup needle into the starting groove on records which do not have lead in grooves.

(15) When lever (A) is set in the 10 or 12 inch position, the pickup positioning cam follower is shifted up or down so as to engage the proper cam. The pickup positioning cam follower can easily be distinguished by the coil spring mounted thereon and linking the cam follower to its extension. This coil spring will extend, preventing damage, if for any reason the pickup arm (M) becomes obstructed while the pickup positioning cam is forcing the pickup arm (M) inwardly.

(16) Just above the pickup positioning cams is the pickup removal cam which has the function of swinging the pickup arm (M) outwardly when the mechanism has been tripped.

(17) The last and uppermost cam operates through cam follower (Z) to release the wheel latch (Y) thus disengaging wheel (L) from the turntable rim at the completion of the change cycle.

(18) On the upper side of the latch control cam is mounted a roller which engages lever (Q) and actuates the record handling fingers (D) through the connecting links provided.

ADJUSTMENT OF SPIRAL TRIP MECHANISM

(19) To adjust the spiral trip to operate farther from the center of the record, loosen the set screw holding dog (G) and move the dog (G) away from the end of the trip rod (K). (Read paragraph 20 before making adjustment.)

(20) Dog (G) is set at the factory to trip when the pickup needle is 1 3/4" from the edge of the hole in the record center. This standard setting is correct for all late recordings and all but a very few of the older ones. To facilitate the location of dog (G) it is best to hold a scale with the end touching the turntable pin (E) and in such a manner that the pickup needle will swing directly above the scale graduations. As noted above, the trip should release when the pickup needle reaches the 1 3/4" graduation. NOTE: If for any reason the position of the pickup arm (M) with relation to the pickup base becomes changed, the trip dog (G) may require resetting. For this reason always check to see that the pickup is being lowered correctly onto the edge of the record before adjusting dog (G). (This pickup adjustment is covered in paragraph 34.)

MECHANISM FAILS TO TRIP

(21) If the mechanism fails to trip always examine the trip grooves on the record first before attempting to make any adjustments. The record grooves may be worn or scratched in such a manner as to cause the pickup needle to jump the grooves. Also try a new pickup needle as the needle may have been damaged.

(22) The trip rod (K) is held in contact with the trip latch (X) by the trip rod tension spring (F). If the eccentric trip fails to operate, it may be necessary to increase the pressure of spring (F) against trip rod (K) but before changing the adjustment, observe the following:

(1) Make sure that the trip rod does not bind in the bearing where it is linked to the pickup base.

(2) Be sure that the trip rod floats freely.

(3) Examine the serrations at (K) to be certain that the sharp edges have not been damaged.

(4) Remove any dirt which may be embedded in the serrations and which would prevent the trip latch (X) from being engaged.

(5) Examine the knife edge of trip latch (X) to see if it has become damaged.

NOTE: Do not increase the pressure of spring (F) against trip rod (K) any more than is necessary to insure operation of the eccentric trip because excessive spring pressure will cause:

(1) Jumping of the pickup needle out of spiral trip grooves at the tripping point.

(2) The eccentric tripping action will require more power and the needle may jump the grooves and fail to trip altogether.

(23) If the trip mechanism still works in a faulty manner after the foregoing precautions have been taken, next check the trip latch (X) and the trip cam lift lever (C) to make sure that they work freely and do not bind on the studs on which they are mounted. If either of these levers are scraping on the base plate, make sure that the studs which carry them have not worked loose.

(24) If the lever (C) moves freely when it clears the trip latch (X) but does not swing into the path of the trip cam (P) then the spring which connects to lever (C) is either stretched or missing. If lever (C) makes a loud click when it drops in, the rubber bumper, against which it should strike, has worked up and should be pressed back into place.

CHANGE MECHANISM DRIVE WHEEL FAILS TO ENGAGE

(25) If the trip mechanism functions in a satisfactory manner and wheel (L) is latched in position to engage the turntable rim but does not contact the turntable rim with sufficient pressure to insure operation, loosen screws at (H) and move the wheel control lever extension outwardly a distance which will bring wheel (L) into positive contact with the turntable rim. CAUTION: This adjustment is very critical and should be carefully made. If wheel (L) is forced too tightly against the turntable rim, the latch (Y) will stick at the completion of the change cycle and prevent the wheel from becoming disengaged from the turntable rim. As an aid in making this adjustment, it is well to scribe a line on the wheel control lever at the end of the wheel control lever extension, so that it can be seen how far the extension is being moved each time. Before making any adjustment, it is also advisable to check the set screw in wheel (L) to make sure that wheel (L) is tight and not turning on the shaft which carries it.

(26) If latch (Y) fails to hold wheel (L) in position:

(1) Lever (I) may not be following through completely on cam (P), due to either lever (C) being bent down, or lever (I) bent up too far.

(2) At the end of lever (I) in vicinity of wheel (L) is noted a dog (W) which is meant to engage in latch (Y). This dog may have been bent outward so that it does not completely enter latch (Y), when lever (I) has completed its travel on cam (P).

(3) The adjustment of fingers on latch lever (Y) is such that the clearance for the dog (W) should be approximately .010". This can be determined by moving lever (I) outward from the center so that the dog (W) will move into latch (Y) and a feeler gauge inserted between the dog and finger to establish this clearance. To adjust for proper clearance, the finger on latch (Y) may be bent in or out.

(4) Check the spring on lever (Z) to make sure that the spring is not defective or missing.

MECHANISM REPEATS

(27) If the mechanism repeats (continues to change records without playing them), the wheel (L) may not be disengaging from the turntable rim. This failure to disengage may be due to the following:

(1) Faulty action of the latch (Y). (See "Caution" in paragraph 25.)

(2) A defective or missing return spring on wheel control lever (I).

(3) A defective or missing spring on lever (Z).

(4) Lever (2) may be bent so that it is not contacting the wheel release cam. (See paragraph 17.)

(28) If wheel (L) disengages at the completion of the change cycle and immediately re-engages, the trip mechanism is at fault and it is suggested that the following be checked:

(1) Reject button (R) may be sticking in the depressed position.

(2) The trip cam (P) may be sticking in the raised position.

(3) The reset spring on trip latch (X) may be defective or missing.

(4) The stud on which wheel control lever (I) is mounted may have worked loose and should be tightened.

MECHANISM TRIPS DURING PLAYING CYCLE

(29) If the mechanism trips during the playing of a record and before the pickup arm has swung inwardly to the point where the trip is adjusted to operate on spiral trip groove records, the following conditions should be checked:

(1) Weak or missing reset spring on latch (X). Tension of spring may be increased by turning the spring anchor lug.

(2) Defective shoulder or trip latch (X) or rounded corner on cam lift lever (C), permitting lever (C) to slip off of the shoulder on trip latch (X).

(3) Rubber bumper (B), against which wheel control lever (I) strikes, may have worked up away from the base plate, permitting lever (I) to over-travel and lock trip rod (K) against trip latch (X). NOTE: Where over-travel of lever (I) due to lever (I) not striking bumper (B) causes tripping during the playing cycle, it is possible that either a weak reset spring on latch (X) or a damaged shoulder on latch (X) is a contributing factor.

PICKUP ARM STICKS OR JAMS

(30) If during normal operation of the unit the pickup arm acts as though it were jammed in any manner, the following procedure should be followed:

First, stop the motor, next remove the turntable, and trip the mechanism. The pickup arm (M) should now be capable of free motion between the normal limits of its travel. (From edge of base plate into within approximately 1" of the center pin (E) depending on the adjustment of trip dog (G).

If trip dog (G) will not slip by the lug against which it strikes on trip latch (X), or the serrations at (K) on trip rod (K) hang up on trip latch (X) and prevent trip rod (K) from sliding by trip latch (X) then investigate the following:

(1) Rubber bumper (B) pushed upwards away from base plate and permitting lever (I) to over-travel.

(2) Excessive pressure exerted against trip rod (K) by spring (F).

(3) Trip rod (K) bent.

(4) An extension on trip latch (X), which extends rearwardly along trip rod (K), may be bent or broken. The function of this extension is to swing trip rod (K) clear of trip latch (X) as soon as tripping takes place.

RECORD SUPPORT ADJUSTMENT

(31) An examination of the unit will disclose the rear record support (front support on A-96) has fixed positions determined by dedents which are located by lever (A). The opposite record support (O) however, is adjustable by means of an overlapping connecting link between the two support bases, underneath the changer unit.

The record support posts should be equidistant from the center of the turntable, so that the opposite sides of the record will be released at nearly the same instant, and so that only one record at a time will be dropped to the turntable. The correct adjustment may best be determined by placing a 10 inch record on the supports, with the support posts in the 10 inch position, and making the adjustment by loosening the screws shown at (V) and moving the record support post (O) to a position so that the entering edges of both separating fingers (N) are equidistant from the edge of the record. (NOTE: The record selected for making this adjustment must be flat and the center hole must fit the center post (E) without excessive looseness.) CAUTION: Before making this adjustment always make sure that lever (A) is firmly located in the proper dedent, and the three feed screw assembly mounting screws are tight. (Vertical alignment of the record centering pin (E) is dependent upon correct feed screw mounting.)

After the adjustment has been made, and the two screws tightened, turn on the motor and observe that the record is released from both support fingers at nearly the same instant. Then place a full stack of records on the supports and observe the dropping of each record. It will be noticed that the combined weight of ten or twelve records resting on the supports, will cause the support posts to spring outward slightly as the change mechanism goes through cycle; and the degree to which the posts swing outward is lessened with a decrease of total record weight. It will also be observed that one post may spring out more than the other during the change cycle, and this should be taken into consideration in making an adjustment of the support posts, so that the degree of unevenness with which the records are released from the support fingers will be "averaged" for the entire stack of records.

RECORD SUPPORT AND SEPARATING FINGERS

(32) As there is a difference in thickness between 10 inch and 12 inch records, and the equipment is designed to accommodate both sizes, the separating fingers (N) must be in correct adjustment so that they will slide in between the two lower records of the stack, and have no tendency to strike the edge of either record. The record supports (D) and the record

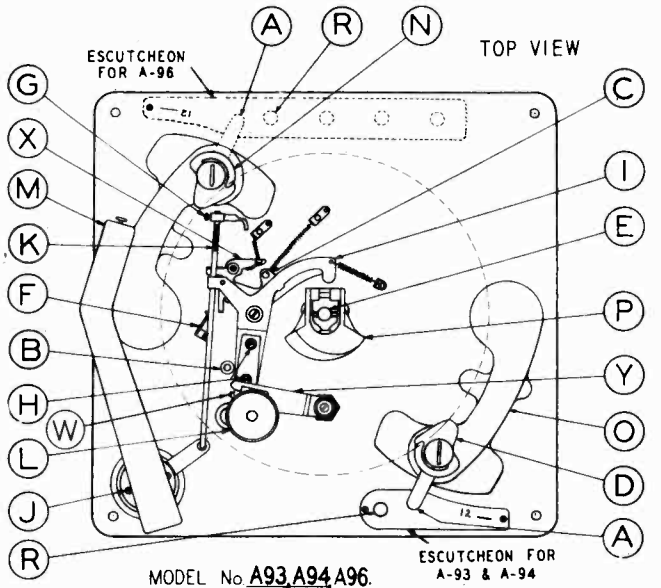
separating fingers (N) are so designed that, when in proper alignment, no chipping of standard records will take place. If, however, the separating finger should strike the edge of a record, due to a warped record, or one having chipped edges, fingers (N) may be sprung out of alignment. For proper operation, the fingers (N) must be perfectly flat. As the fingers are usually found to be bent upwards, rather than downwards, when out of correct alignment, it is necessary to remove the fingers from the support posts to straighten them. A heavy screw driver will be required to loosen the large screw at the top of the post, and the order of placement of the fingers and spacers should be noted in removing these parts so that they may be replaced in correct order. Ordinarily, straightening can be accomplished by holding the main part of the finger (N) through which the clamping screw passes, with one hand, and then taking hold of the sickle shaped part of (N) with the fingers of the other hand, bending the sickle shaped part until it is lined up with the main body. DO NOT USE PLIERS NOR ATTEMPT TO STRAIGHTEN THE FINGER (N) IN A VISE. After bending, lay the finger (N) on a flat surface to make sure the straightening has been properly done.

PICKUP ARM LIFT ADJUSTMENT

(33) The height to which pickup arm (M) is lifted during the change cycle may be adjusted by the screw (U). In making this adjustment, make sure that the pickup arm will not lift high enough to strike the bottom record on the record supports. Also make sure that the pickup needle drops low enough to rest properly on one record on the turntable. (Recommended needle length 5/8") If the timing of the pickup lift is not correct, loosen the set screw holding lift cam (T) on shaft (S) and relocate the cam. (The relative position of the remaining cams is fixed.)

ADJUSTMENT OF PICKUP LOWERING POINT

(34) To adjust the pickup arm (M) so that it will be lowered to the correct point on the outside of the record, first shift the lever (A) to the 10" position, and then stop the mechanism with the pickup positioning cam follower at the point of maximum rise of the pickup positioning cam. (See paragraphs 13, 14, and 15.) Now raise the pickup arm to the vertical position and loosen screws at (J) so that the arm (M) can be moved with relation to the pickup base but not too freely. Next holding the pickup base so that it will not turn, force the pickup arm (M) toward the record centering pin (E). Next, carefully pull the pickup arm (M) outwardly until the pickup needle is 4-45/64" from the pin (E). Raise the pickup arm (M) and tighten the locking screws at (J) being careful not to move arm (M) outwardly past the correct setting before tightening the screws. This adjustment will automatically take care of 12" records as well as 10" as will be seen by moving lever (A) to the 12" position and running the unit through its cycle. If the pickup arm (M) always lowers in the 12" position regardless of the position of the lever (A) the pickup positioning cam follower is sticking in the down position.

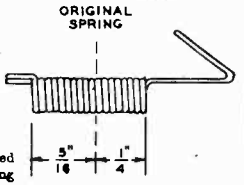


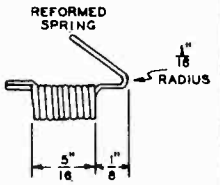
MODEL No. A93,A94,A96.
DATE 12-11-40

CONCERNING RECORDED "WOW" IN MODELS A-93 AND A-94

If recorded "wow" is encountered in dual-speed recorder units of the automatic record changer type used in equipment bearing serial numbers prior to 624010, a correction may usually be effected by increasing the tension of the intermediate drive wheel spring.

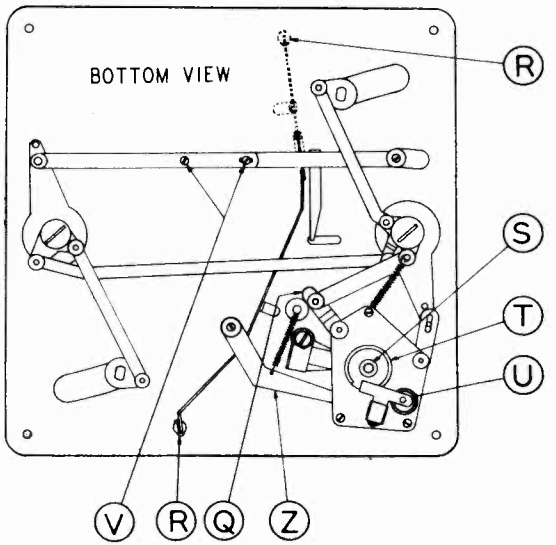
INCORPORATING #55-2020 AUTOMATIC RECORD CHANGER AND RECORDER UNIT





To accomplish this, proceed as follows:

1. Remove turntable and intermediate drive wheel assembly. (See Operating Instructions.)
2. Remove recorder-changer unit by removing the four mounting screws, and disconnecting cables with plugs, from Recordio chassis.
3. Place recorder-changer unit on the work bench, tilted to a position that provides easy access to the under side of the unit. DO NOT PLACE UNIT IN AN UPSIDE-DOWN POSITION, as the record spindle may be sprung or bent.
4. Remove the intermediate drive wheel spring, and make alterations to the spring in accord with the specifications given below.
5. Remove twelve turns at the hook end of the spring. Straighten out three turns of the coiled spring, and--
6. form a new hook so that the bend in the hook is only 1/8" from the coiled spring. DO NOT MAKE A SHARP BEND IN FORMING THE HOOK. Instead, form a 1/16" radius as shown in the drawing.
7. Before replacing the spring in the unit, remove the burred or ragged edge of the hole in the base plate, through which the pin protrudes for attachment of the loop end of the spring.
8. After the spring has been installed, and the unit restored to the cabinet, the intermediate drive wheel assembly and turntable should be replaced in accord with the directions given on Page 6 of the Operating Instructions.

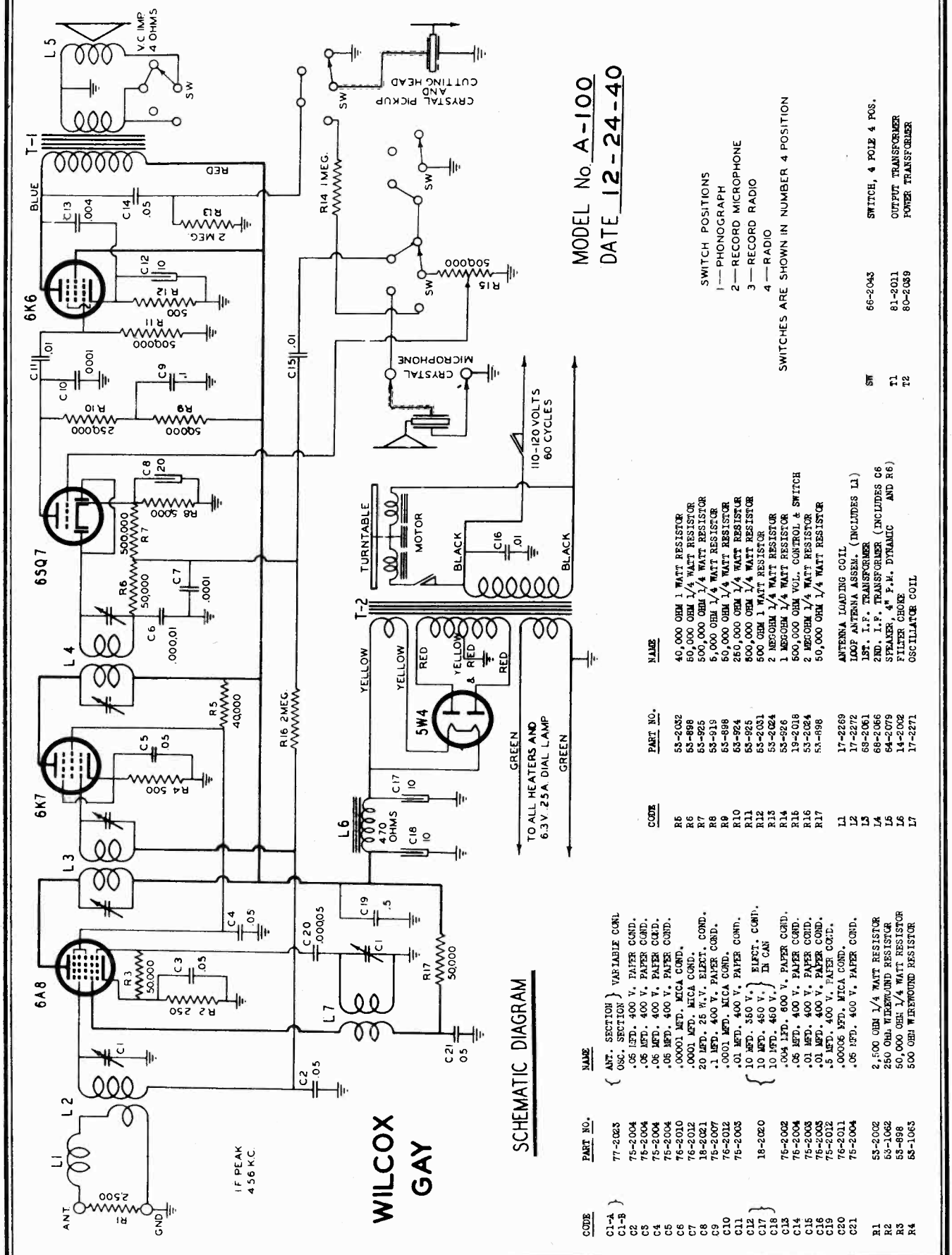


MODEL No. A-93,A-94
DATE 2-7-41

WILCOX-GAY CORP.

MODEL A-100

MODEL No. A-100
DATE 12-24-40



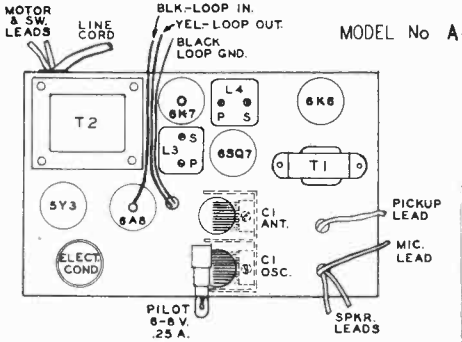
CODE	PART NO.	NAME
C1-A }	77-2023	ANT. SECTION } VARIABLE COND.
C1-B }		OSC. SECTION }
C2	75-2004	.05 MFD. 400 V. PAPER COND.
C3	75-2004	.05 MFD. 400 V. PAPER COND.
C4	75-2004	.05 MFD. 400 V. PAPER COND.
C5	75-2004	.05 MFD. 400 V. PAPER COND.
C6	76-2010	.00001 MFD. MICA COND.
C7	76-2012	.0001 MFD. MICA COND.
C8	18-2021	20 MFD. 25 W.V. ELECT. COND.
C9	75-2007	.1 MFD. 400 V. PAPER COND.
C10	76-2012	.0001 MFD. MICA COND.
C11	75-2005	.01 MFD. 400 V. PAPER COND.
C12 }	18-2020	.10 MFD. 350 V. } ELECT. COND.
C17 }		10 MFD. 450 V. } IN CAN
C18 }		10 MFD. 450 V. }
C13	76-2002	.004 MFD. 600 V. PAPER COND.
C14	76-2004	.05 MFD. 400 V. PAPER COND.
C15	75-2003	.01 MFD. 400 V. PAPER COND.
C16	75-2003	.01 MFD. 400 V. PAPER COND.
C19	75-2012	.5 MFD. 400 V. PAPER COND.
C20	76-2011	.00006 MFD. MICA COND.
C21	75-2004	.05 MFD. 400 V. PAPER COND.
R1	53-2002	2,500 OHM 1/4 WATT RESISTOR
R2	53-1062	250 OHM WIREWOUND RESISTOR
R3	53-898	50,000 OHM 1/4 WATT RESISTOR
R4	53-1063	500 OHM WIREWOUND RESISTOR
R5	53-2032	40,000 OHM 1 WATT RESISTOR
R6	53-898	50,000 OHM 1/4 WATT RESISTOR
R7	53-925	500,000 OHM 1/4 WATT RESISTOR
R8	53-919	5,000 OHM 1/4 WATT RESISTOR
R9	53-898	50,000 OHM 1/4 WATT RESISTOR
R10	53-924	250,000 OHM 1/4 WATT RESISTOR
R11	53-925	500,000 OHM 1/4 WATT RESISTOR
R12	53-2031	500 OHM 1 WATT RESISTOR
R13	53-2024	2 MEGOHM 1/4 WATT RESISTOR
R14	53-926	1 MEGOHM 1/4 WATT RESISTOR
R15	19-2018	500,000 OHM VOL. CONTROL & SWITCH
R16	53-2024	2 MEGOHM 1/4 WATT RESISTOR
R17	53-898	50,000 OHM 1/4 WATT RESISTOR
L1	17-2269	ANTENNA LOADING COIL
L2	17-2272	LOOP ANTENNA ASSEM. (INCLUDES L1)
L5	69-2061	1ST. I.F. TRANSFORMER
L4	68-2066	2ND. I.F. TRANSFORMER (INCLUDES 66
L5	64-2079	SPEAKER, 4" P.M. DYNAMIC AND R6)
L6	14-2062	FILTER CHOKE
L7	17-2271	OSCILLATOR COIL
SW	66-2043	SWITCH, 4 POLE 4 POS.
T1	81-2011	OUTPUT TRANSFORMER
T2	80-2039	POWER TRANSFORMER

GANGING INSTRUCTIONS

An OUTPUT METER, connected to the speaker voice coil terminals, should be used for accuracy in making ganging adjustments.

The voice coil terminals, as well as the I.F. trimmers, may be made accessible by removing the screws by which the motor panel is mounted in the cabinet. Before lifting off the phono-recorder unit, MOVE THE PHONO. ARM TO THE CENTER OF THE TURNTABLE, and permit the arm to maintain this position until after the unit has been restored to the cabinet. In this way, the follower arm which engages the lateral feed screw will be protected against damage.

The R.F. trimmers may be reached through the opening provided in the bottom of the cabinet.



MODEL No A-100

Connect signal generator to control grid of 6A8 tube.*

SIGNAL GENERATOR FREQUENCY	DIAL POSITION	TRIMMER
456 K.C.	1700 K.C.	L3-S**
" "	" "	L3-P**
" "	" "	L4-S**
" "	" "	L4-P**

Connect signal generator to ANT. and GND. terminals.

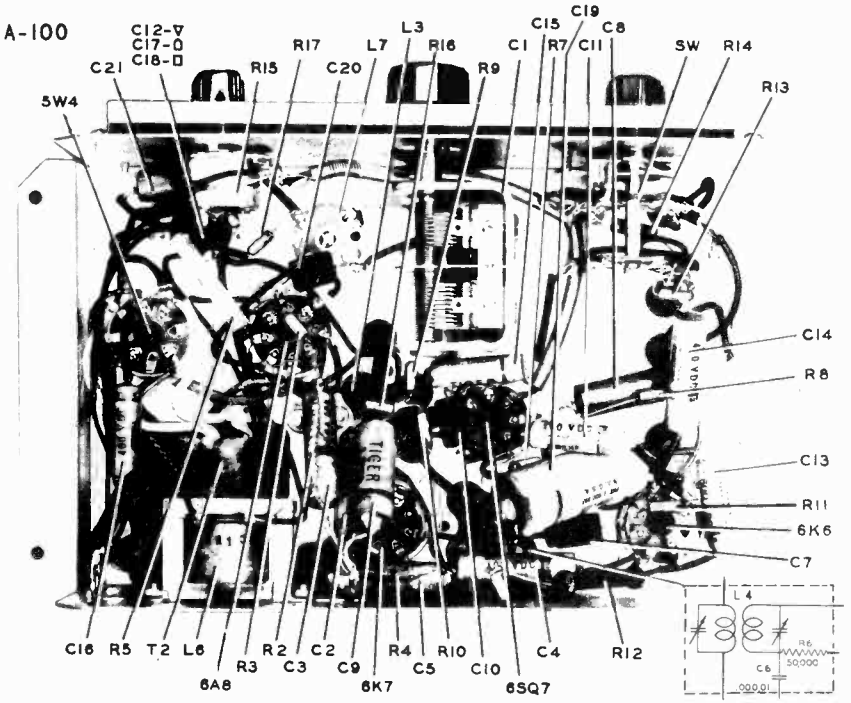
1400 K.C.	1400 K.C.	C1-OSC.
" "	" "	C1-ANT.

* Check the alignment of pointer with reference line below 550 K.C. on the scale. The pointer may be slipped on the shaft to correct for misalignment.

** In ganging the I.F. amplifier, use a low signal input to avoid setting up of oscillation in the amplifier.

NOTE: In the event of loop antenna replacement, the R.F. alignment should be checked at 600 K.C., and if necessary, inductance of the loop may be adjusted to bring about correct alignment of the dial at 600 K.C., by dressing the end of the inside loop turn to provide more or less inductance as required.

An adjustment of loop inductance should be followed by re-alignment of the R.F. trimmers at 1400 K.C.



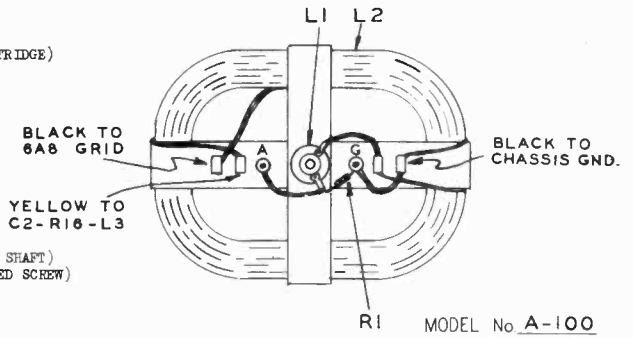
VOLTAGE DATA

Line Voltage---117
C17 to GND.----270
C18 to GND.----250
C21 to GND.----115

All voltage measurements made against ground (chassis) by use of a 1000 ohm per volt voltmeter.

Tube	Position	Plate	Screen	Cathode
6A8	1st. Det.	250	80	2.5
	Osc.	115		
6K7	I.F.	250	80	3.7
6SQ7	2nd. Det.	80*	--	1.3
6K6	Output	225	250	17.0

* Not actual voltage due to large value of resistance in circuit between supply voltage and point of measurement.



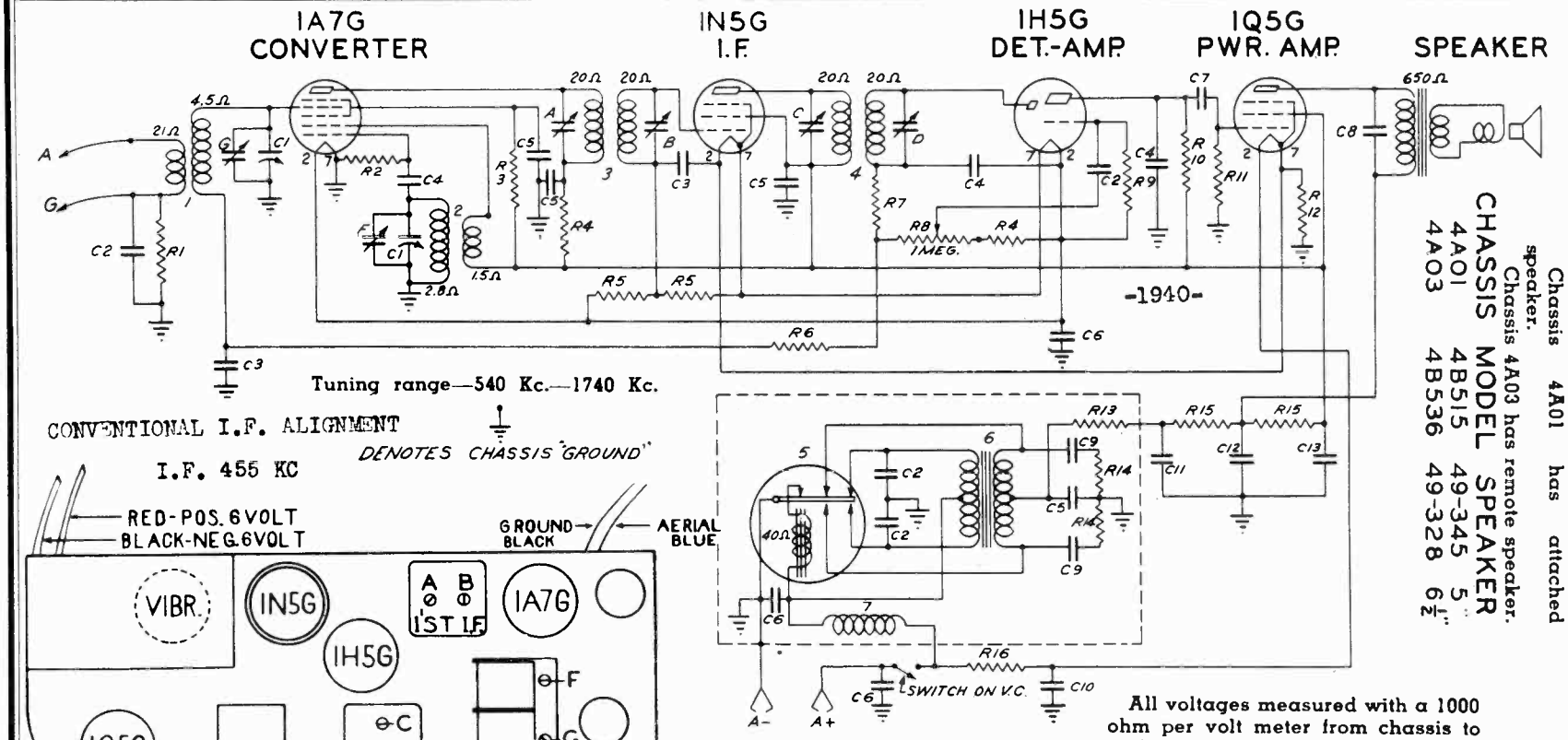
MODEL No A-100
DATE 1-10-41
12-30-40
12-24-40

MODEL A-100
RECORDIO JR. PARTS LIST

55-2027	RECORDER UNIT--COMPLETE	
2-2041	RECORDER PICKUP ARM ASSEM. (WITH CARTRIDGE)	
2-2040	ARM CHANNEL ONLY	
16-2002	CORD RETAINER CLIP	
23-2035	CRYSTAL CARTRIDGE (L-26)	
51-2117	CARTRIDGE CLAMP PLATE	
57-2083	CARTRIDGE MTG. SCREW	
57-2119	CONE POINT PIVOT SCREW	
48-2016	CONE POINT SCREW LOCKNUT	
2-2043	FOLLOWER ARM ASSEMBLY	
5-2376	FOLLOWER ARM STOP BRACKET	
79-2010	INTERMEDIATE DRIVE WHEEL	
16-2005	DRIVE WHEEL STUD CLIP	
57-2118	LATERAL FEED SCREW ASSEM. (WITH T.T. SHAFT)	
47-2029	MOTOR & PLATE ASSEM. (LESS T.T. & FEED SCREW)	
66-2042	MOTOR SWITCH	
40-2053	MOTOR SWITCH KNOB	
57-2100	MOTOR MTG. SCREWS	
52-2165	NEEDLE RECEPTACLE	
57-2056	NEEDLE SCREW	
58-2043	PIVOT POST SHAFT ASSEMBLY	
5-2374	PIVOT POST LOCK SPRING ASSEMBLY	
6-2029	PIVOT POST BUSHING	
73-2066	PIVOT POST BUSHING MTG WASHER 2 1/32" DIA. ST. BRONZE	
73-2067	PIVOT POST BUSHING MTG WASHER 2 1/32" DIA. PLAIN	
73-2036	PIVOT POST BUSHING MTG LOCKWASHER	
48-2009	PIVOT POST BUSHING MTG NUT	
5-2371	PICKUP ARM REST	
70-2022	TURNTABLE (WITH PIN MOUNTED)	
52-2133	TURNTABLE DRAG PIN	
67-2050	TURNTABLE DRAG PIN SPRING	
57-1669	TURNTABLE DRAG PIN SPRING MTG. SCREW	
73-1642	TURNTABLE DRAG PIN SPRING MTG. LOCKWASHER	

ZENITH RADIO CORP.

MODEL 4B515, Ch. 4A01
MODEL 4B536, Ch. 4A03



NOTE
Chassis 4A01 has attached speaker.
Chassis 4A03 has remote speaker.

CHASSIS MODEL SPEAKER
4A01 4B515 49-345 5"
4A03 4B536 49-328 6½"

DIAG Nº	PART Nº	DESCRIPTION		DIAG Nº	PART Nº	DESCRIPTION	
C1	22-695	TWO GANG VARIABLE		R2	63-595	100M OHM	¼ W.
C2	22-826	.01 MFD.	200V	R3	63-594	68M OHM	¼ W.
C3	22-829	.05 MFD.	200V	R4	63-583	1000 OHM	¼ W.
C4	22-162	.0001 MFD.	600V	R5	63-296	220M OHM	¼ W.
C5	22-828	.05 MFD.	400V	R6	63-669	3.9 MEGOHM	¼ W.
C6	22-199	.5 MFD.	200V	R7	63-593	47M OHM	¼ W.
C7	22-243	.01 MFD.	400V	R8	63-1079	VOLUME CONTROL	
C8	22-448	.004 MFD.	600V	R9	63-976	15 MEGOHM	¼ W.
C9	22-966	.04 MFD.	600V	R10	63-271	1 MEGOHM	½ W.
C10	22-961	500MFD. ELECTROLYTIC	15V.	R11	63-600	2.2 MEGOHM	¼ W.
C11		15MFD. ELECTROLYTIC	250V.	R12	63-1060	900HM WIREWOUND	1 W.
C12	22-742	15MFD. ELECTROLYTIC	250V.	R13	63-577	100 OHM	¼ W.
C13		10MFD. ELECTROLYTIC	250V.	R14	63-697	100 OHM	¼ W.
				R15	63-605	1000 OHM	½ W.
				R16	63-1061	7 OHM	½ W.
R1	63-597	470M OHM	¼ W.				

Stage Gains:

Ant. to conv. grid—4.9× at 1000 Kc.

Conv. grid to I. F. grid—50× at 455 Kc.

Overall audio—448× at .050 watt —400 cycles.

All voltages measured with a 1000 ohm per volt meter from chassis to socket contacts.

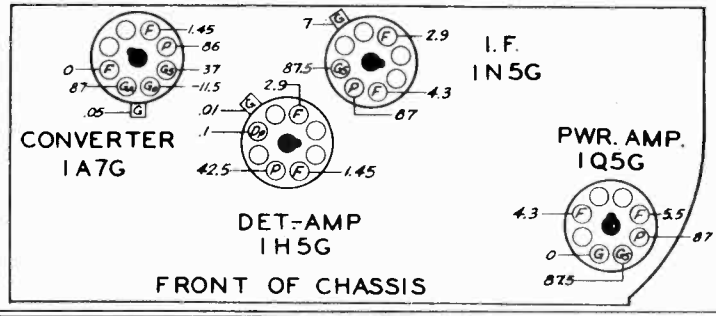
Voltage readings are all positive D.C. unless otherwise indicated.

Antenna disconnected volume control full on.

Battery voltage 6 volt.

Battery consumption—.4 ampere.

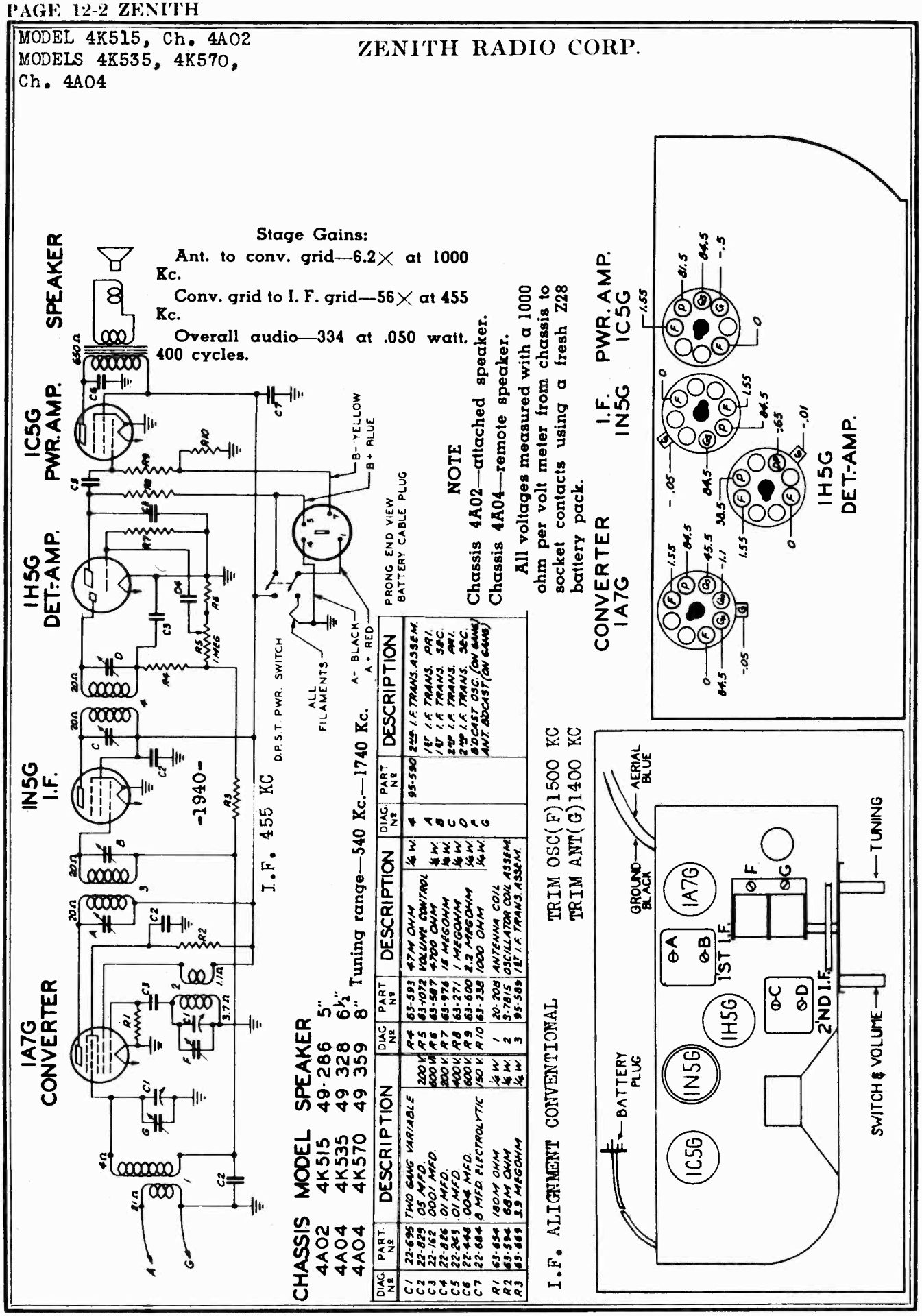
Power Output—370 milliwatts.



DIAG. Nº	PART Nº	DESCRIPTION
1	23-208	ANTENNA COIL
2	S6381	OSCILLATOR COIL ASSEM
3	95-589	1ST I.F. TRANS.
4	95-590	2ND I.F. TRANS.
5	190-17	VIBRATOR
6	95-635	POWER TRANSFORMER
7	S5043	CHOKE ASSEMBLY
A		1ST I.F. TRANS. PRI.
B		1ST I.F. TRANS. SEC.
C		2ND I.F. TRANS. PRI.
D		2ND I.F. TRANS. SEC.
F		B'DCAST OSC. (ON GANG)
G		ANT. B'DCAST (ON GANG)

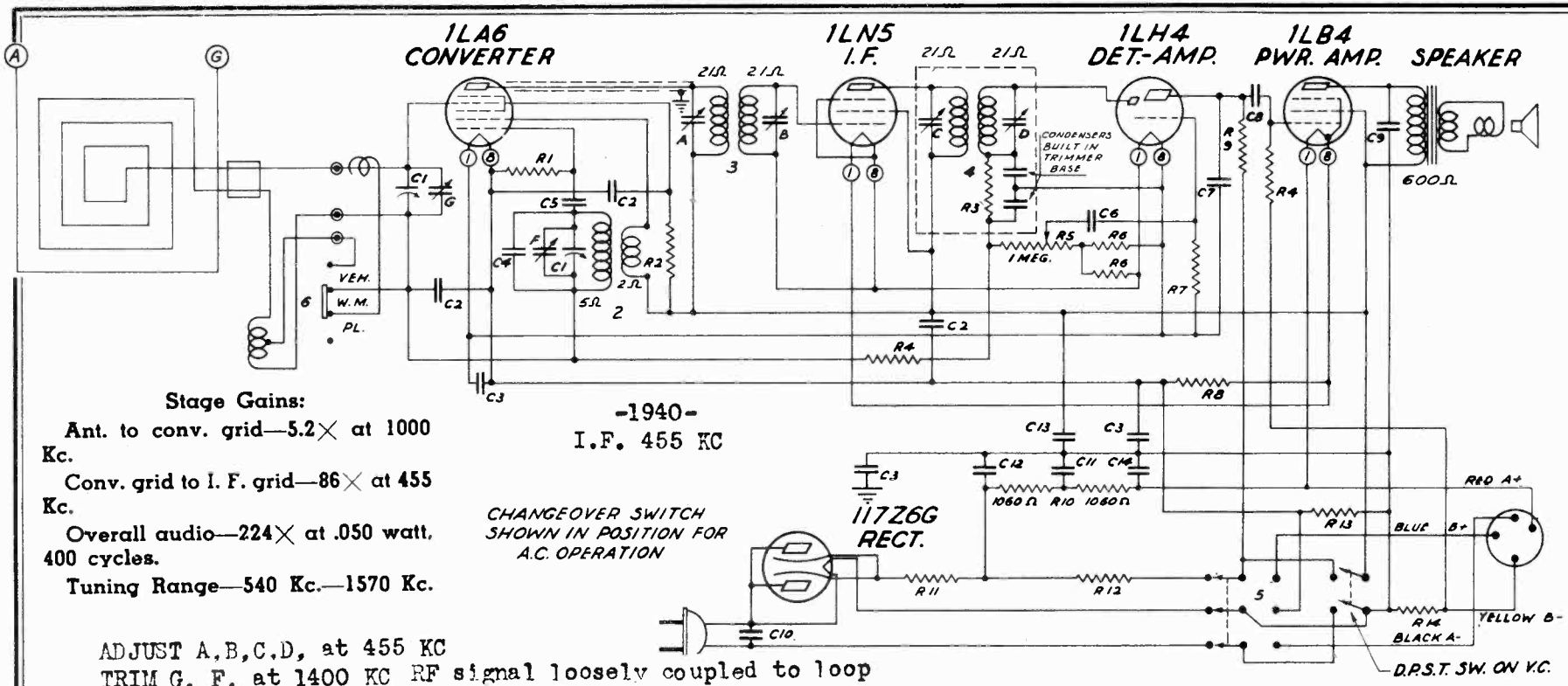
MODEL 4K515, Ch. 4A02
MODELS 4K535, 4K570,
Ch. 4A04

ZENITH RADIO CORP.



CHASSIS	MODEL	SPEAKER		
4A02	4K515	49-286	5"	
4A04	4K535	49 328	6½"	
4A04	4K570	49 359	8"	

DIAG. Nº	PART Nº	DESCRIPTION
C1	22-696	TWO GANG VARIABLE
C2	22-829	.05 MFD.
C3	22-162	.0001 MFD.
C4	22-816	.01 MFD.
C5	22-243	.01 MFD.
C6	22-446	.004 MFD.
C7	22-684	8 MFD. ELECTROLYTIC
R1	63-654	1800 OHM
R2	63-594	68M OHM
R3	63-669	3.9 MEGOHM
R4	63-593	47M OHM
R5	63-1072	VOLUME CONTROL
R6	63-587	4700 OHM
R7	63-976	15 MEGOHM
R8	63-271	1 MEGOHM
R9	63-600	2.2 MEGOHM
R10	63-238	1000 OHM
1	20-205	ANTENNA COIL
2	3-7815	OSCILLATOR COIL ASSEM.
3	95-589	1ST I.F. TRANS. ASSEM.
4	95-590	2ND I.F. TRANS. ASSEM.
A		1ST I.F. TRANS. PRI.
B		1ST I.F. TRANS. SEC.
C		2ND I.F. TRANS. PRI.
D		2ND I.F. TRANS. SEC.
E		BROADCAST OSC. (ON GANG)
F		ANT. BROADCAST (ON GANG)
G		



Stage Gains:

Ant. to conv. grid—5.2× at 1000 Kc.

Conv. grid to I. F. grid—86× at 455 Kc.

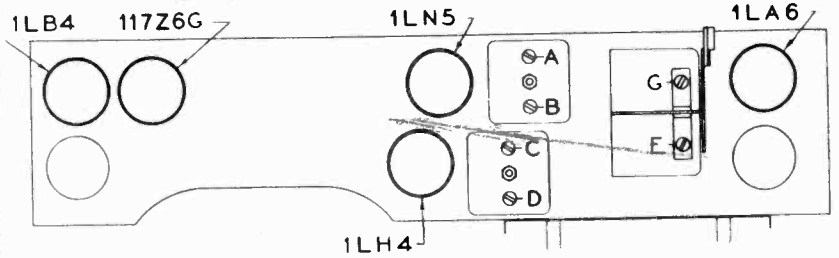
Overall audio—224× at .050 watt, 400 cycles.

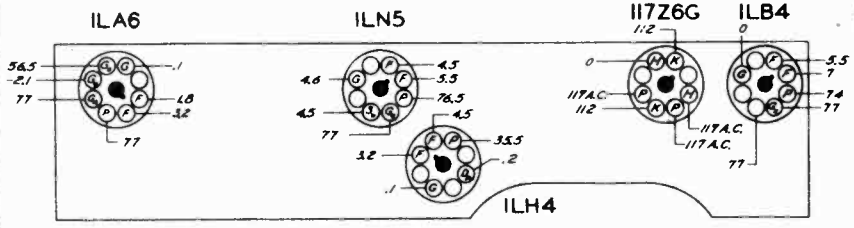
Tuning Range—540 Kc.—1570 Kc.

-1940-
I.F. 455 KC

CHANGEOVER SWITCH SHOWN IN POSITION FOR A.C. OPERATION

ADJUST A, B, C, D, at 455 KC
TRIM G, F, at 1400 KC RF signal loosely coupled to loop





VOLTAGES MEASURED FROM SOCKET TERMINALS TO A.C. LINE AT CHANGEOVER SWITCH.

DIAG. NO	PART NO	DESCRIPTION		DIAG. NO	PART NO	DESCRIPTION	
C1	22-1026	TWO GANG VARIABLE		R1	63-773	180 M OHM	¼ W.
C2	22-829	.05 MFD.	200 V.	R2	63-590	15 M OHM	½ W.
C3	22-827	.1 MFD.	200 V.	R3	63-713	47 M OHM	½ W.
C4	22-988	20 MMFD.	600 V.	R4	63-722	2.2 MEGOHM	¼ W.
C5	22-162	.0001 MFD.	600 V.	R5	63-1121	VOLUME CONTROL	
C6	22-492	.002 MFD.	600 V.	R6	63-587	4700 OHM	½ W.
C7	22-470	.00015 MFD.	600 V.	R7	63-1093	15 MEGOHM	½ W.
C8	22-243	.01 MFD.	400 V.	R8	63-1097	870 OHM WIREWOUND	1 W.
C9	22-448	.004 MFD.	600 V.	R9	63-271	1 MEGOHM	½ W.
C10	22-869	.05 MFD.	400 V.	R10	63-1120	2-SECTION CANOHM	
C11	22-1026	20 MFD. ELECTROLYTIC	150 V.	R11	63-1096	940 OHM WIREWOUND	2 W.
C12		40 MFD. "	150 V.	R12	63-439	2700 OHM	½ W.
C13	22-1027	20 MFD. "	150 V.	R13	63-1099	33 OHM WIREWOUND	½ W.
C14		20 MFD. "	25 V.	R14	63-742	180 OHM	½ W.

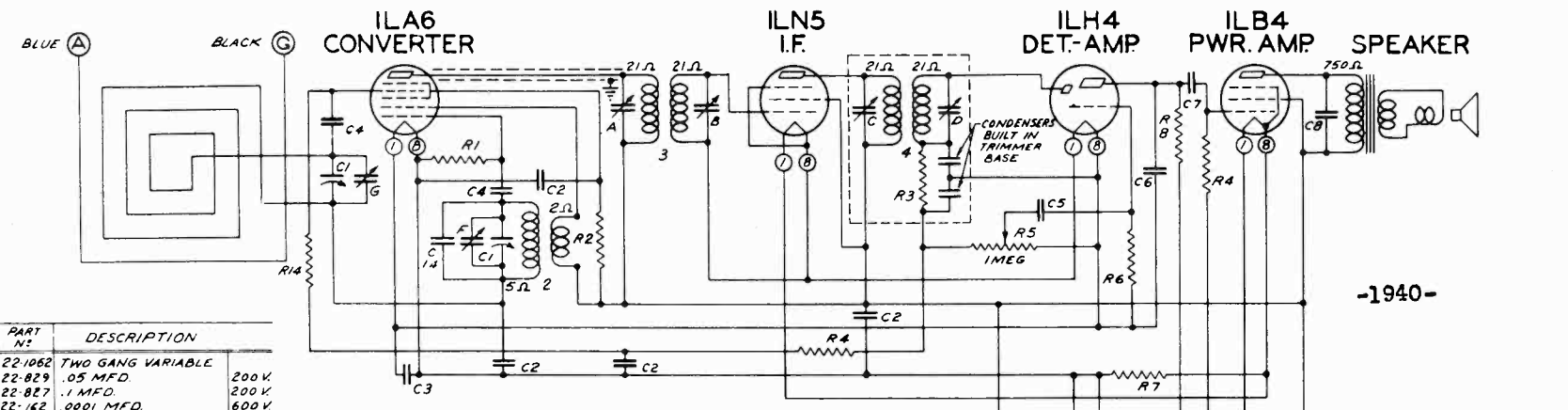
All voltages measured from point indicated to Neg. B. using 20000 ohm per volt meter.

Line voltage—117 v. A.C.

Power consumption—117 v.—20 watts.

Power consumption, battery—1.02 watts.

MODEL	SPEAKER
5G500	49-386 5½"
5G500L	49-386 5½"

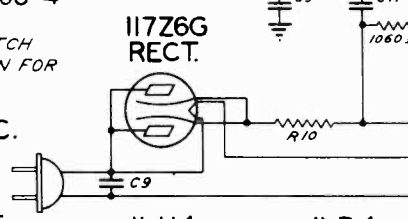


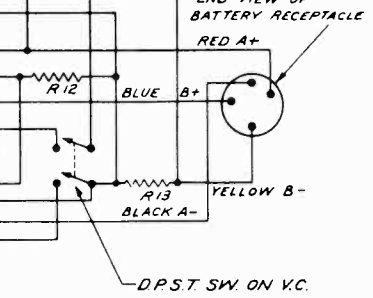
-1940-

MODEL 5G504 SPEAKER 49-408 4"

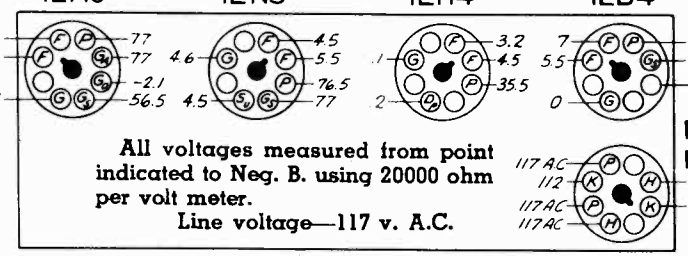
CHANGEOVER SWITCH SHOWN IN POSITION FOR A.C. OPERATION

I.F. FREQUENCY 455 KC.





DIAG Nº	PART Nº	DESCRIPTION	
C1	22-1062	TWO GANG VARIABLE	
C2	22-829	.05 MFD.	200 V.
C3	22-827	.1 MFD.	200 V.
C4	22-162	.0001 MFD.	600 V.
C5	22-492	.002 MFD.	600 V.
C6	22-470	.00015 MFD.	600 V.
C7	22-243	.01 MFD.	400 V.
C8	22-326	.003 MFD.	400 V.
C9	22-869	.05 MFD.	400 V.
C10	22-1026	(20 MFD. ELECTROLYTIC	150 V.
C11		40 MFD. "	150 V.
C12	22-1027	(20 MFD. "	150 V.
C13		20 MFD. "	25 V.
C14	22-285	10 MMFD.	600V
R1	63-773	180 M OHM	½ W.
R2	63-646	33 M OHM	½ W.
R3	63-713	47 M OHM	½ W.
R4	63-600	2.2 MEGOHM	½ W.
R5	63-1126	VOLUME CONTROL	
R6	63-976	15 MEGOHM	½ W.
R7	63-1097	870 OHM WIREWOUND	1 W.
R8	63-271	1 MEGOHM	½ W.
R9	63-1137	2-SECTION CANDOHM	
R10	63-1096	140 OHM WIREWOUND	2 W.
R11	63-439	2700 OHM	¼ W.
R12	63-1099	33 OHM WIREWOUND	½ W.
R13	63-742	180 OHM	¼ W.
R14	63-296	220M OHM	¼ W.
1	58742	WAVEMAGNET ASSEMBLY	
2	58730	OSC. COIL ASSEMBLY	
3	95-720	1ST I.F. TRANSFORMER	
4	95-721	2ND I.F. TRANSFORMER	
5	85-242	CHANGEOVER SWITCH	
A		1ST I.F. TRANS. PRI.	
B		1ST I.F. " SEC.	
C		2ND I.F. " PRI.	
D		2ND I.F. " SEC	
F		BROADCAST OSC (ON GANG)	
G		BROADCAST ANT (ON GANG)	



All voltages measured from point indicated to Neg. B. using 20000 ohm per volt meter.
Line voltage—117 v. A.C.

Power consumption—117 v.—20 watts.
Power consumption, battery—1.02 watts.
Power output—170 milliwatts.

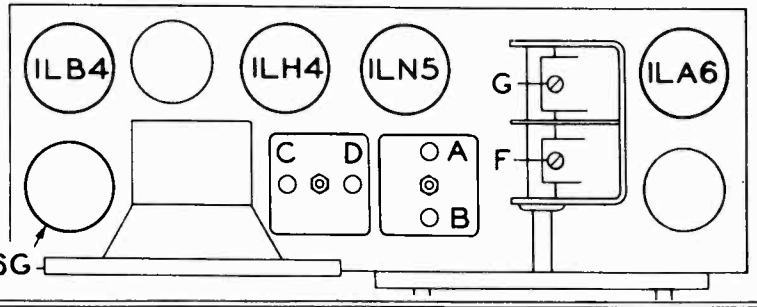
Stage Gains:

Ant. to conv. grid—4.9× at 1000 Kc.

Conv. grid to I. F. grid—53× at 455 Kc.

Overall audio—280× at .050 watt, 400 cycles.

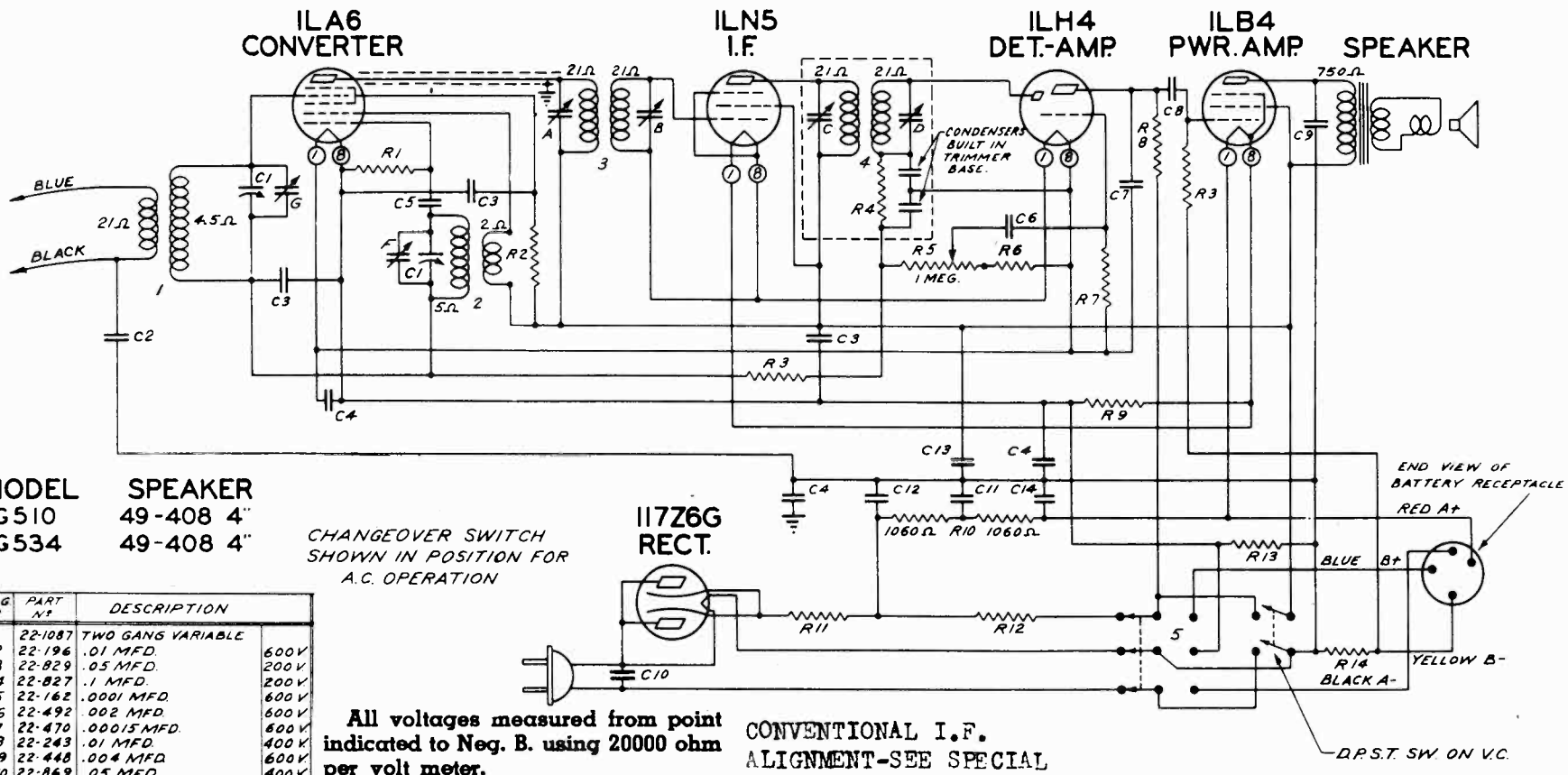
Tuning Range—540 Kc.—1600 Kc.



I.F. ALIGNMENT CONVENTIONAL
SEE SPECIAL SECTION VOL. VIII

I.F. TRIMMERS A,B,C,D
For R.F. Alignment
Couple test oscillator
thru single turn loop
to Wavemagnet
TRIM OSC,ANT (F,G) 1400 KC

ZENITH RADIO CORP.



MODEL	SPEAKER
5G510	49-408 4"
5G534	49-408 4"

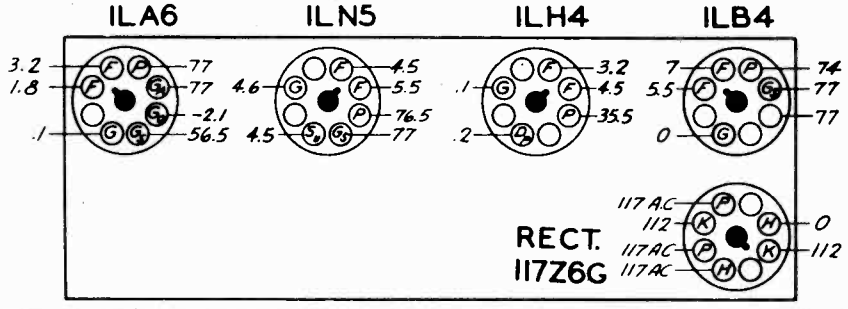
CHANGEOVER SWITCH SHOWN IN POSITION FOR A.C. OPERATION

DIAG N°	PART N°	DESCRIPTION	
C1	22-1087	TWO GANG VARIABLE	
C2	22-196	.01 MFD.	600 V
C3	22-829	.05 MFD.	200 V
C4	22-827	.1 MFD.	200 V
C5	22-162	.0001 MFD.	600 V
C6	22-492	.002 MFD.	600 V
C7	22-470	.00015 MFD.	600 V
C8	22-243	.01 MFD.	400 V
C9	22-448	.004 MFD.	600 V
C10	22-869	.05 MFD.	400 V
C11	22-1026	20 MFD. ELECTROLYTIC	150 V.
C12		40 MFD. "	150 V.
C13	22-1027	20 MFD. "	150 V.
C14		20 MFD. "	25 V
R1	63-654	180 M OHM	1/4 W
R2	63-646	33 M OHM	1/4 W
R3	63-600	2.2 MEGOHM	1/4 W
R4	63-713	47 M OHM	1/4 W
R5	63-1144	VOLUME CONTROL	
R6	63-587	4700 OHM	1/4 W
R7	63-1093	15 MEGOHM	1/4 W
R8	63-271	1 MEGOHM	1/4 W
R9	63-1097	870 OHM WIREWOUND	1 W.
R10	63-1137	2 SECTION CANDOHM	
R11	63-1096	140 OHM WIREWOUND	2 W
R12	63-439	2700 OHM	1/8 W
R13	63-1099	35 OHM WIREWOUND	1/2 W
R14	63-627	180 OHM	1/4 W

All voltages measured from point indicated to Neg. B. using 20000 ohm per volt meter.

Antenna disconnected — volume control at minimum and condenser plates in full mesh.

Line voltage—117 v. A.C.



CONVENTIONAL I.F. ALIGNMENT-SEE SPECIAL SECTION VOL. VIII
I.F. 455 KC
TRIM ANT-OSC 1400 KC

Power consumption—117 v.—18.5 watts.

Power consumption, battery—1.02 watts.

Power output—160 milliwatts.

Stage Gains:

Ant. to conv. grid—3.8× at 1000 Kc.

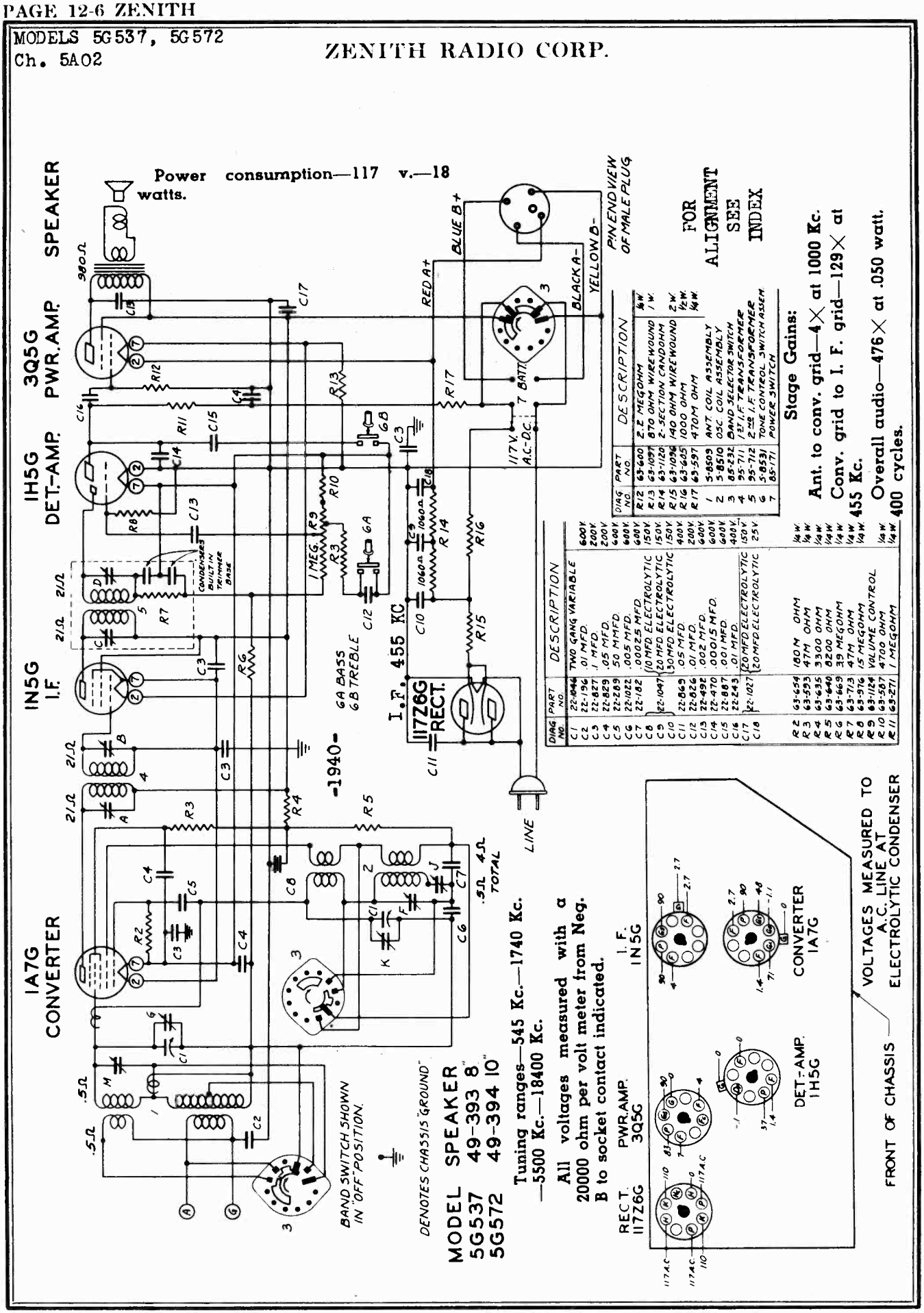
Conv. grid to I. F. grid—65× at 455 Kc.

Overall audio—260× at .050 watt, 400 cycles.

Tuning Range—540 Kc.—1600 Kc.

MODELS 5G537, 5G572
Ch. 5A02

ZENITH RADIO CORP.



DIAG NO	PART NO	DESCRIPTION	
C1	22-1044	TWO GANG VARIABLE	600V
C2	22-196	.01 MFD.	200V
C3	22-827	.1 MFD.	200V
C4	22-829	.05 MFD.	600V
C5	22-269	.50 MMFD.	600V
C6	22-1022	.005 MFD.	600V
C7	22-182	.00025 MFD.	600V
C8		10 MFD ELECTROLYTIC	150V
C9	22-1047	20 MFD ELECTROLYTIC	150V
C10		30 MFD ELECTROLYTIC	150V
C11	22-869	.05 MFD.	400V
C12	22-826	.01 MFD.	200V
C13	22-492	.002 MFD.	600V
C14	22-470	.0015 MFD.	600V
C15	22-887	.001 MFD.	600V
C16	22-243	.01 MFD.	400V
C17	22-1027	20 MFD ELECTROLYTIC	150V
C18		20 MFD ELECTROLYTIC	25V

DIAG NO	PART NO	DESCRIPTION	
R2	63-654	180 M OHM	¼W
R3	63-523	47M OHM	¼W
R4	63-635	3300 OHM	¼W
R5	63-640	8200 OHM	¼W
R6	63-669	39 MEGOHM	¼W
R7	63-713	47M OHM	¼W
R8	63-976	15 MEGOHM	¼W
R9	63-1124	VOLUME CONTROL	¼W
R10	63-587	4700 OHM	¼W
R11	63-271	1 MEGOHM	¼W

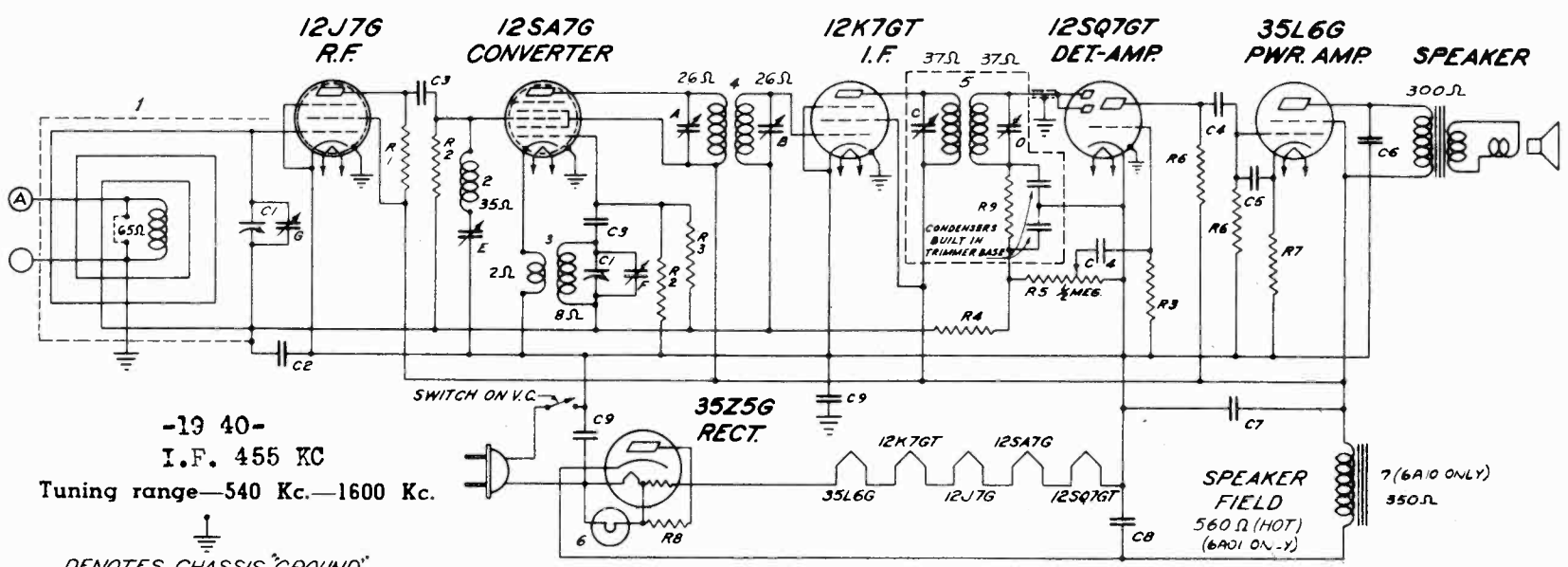
DIAG NO	PART NO	DESCRIPTION	
R12	63-600	2.2 MEGOHM	¼W
R13	63-1097	870 OHM WIREWOUND	1W.
R14	63-1120	2-SECTION CANDOHM	
R15	63-1096	140 OHM WIREWOUND	2W.
R16	63-605	1000 OHM	½W.
R17	63-597	4700 OHM	¼W.
1	3-8503	ANT. COIL ASSEMBLY	
2	3-8510	OSC. COIL ASSEMBLY	
3	85-132	BAND SELECTOR SWITCH	
4	95-711	1ST I.F. TRANSFORMER	
5	95-712	2ND I.F. TRANSFORMER	
6	3-8531	TONE CONTROL SWITCH ASSEM	
7	85-171	POWER SWITCH	

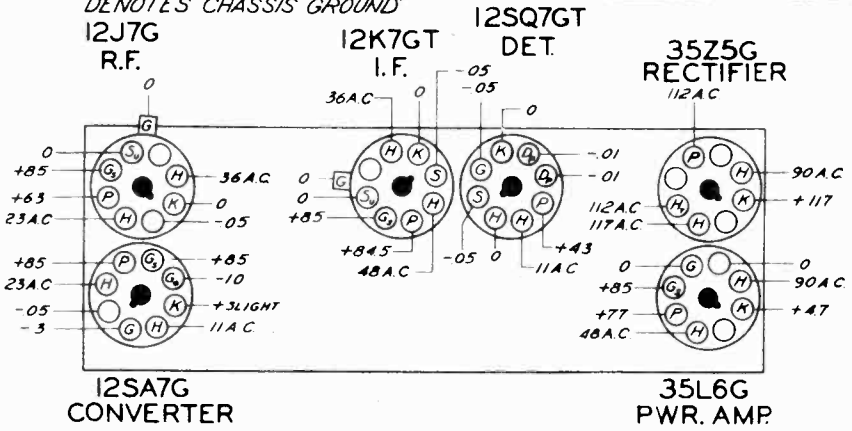
Stage Gains:

Ant. to conv. grid—4× at 1000 Kc.
Conv. grid to I. F. grid—129× at 455 Kc.
Overall audio—476× at .050 watt. 400 cycles.

ZENITH RADIO CORP.

MODEL 6D510, Ch. 6A01
MODELS 6D525, 6D526,
Ch. 6A10





DIAG. NO.	PART NO.	DESCRIPTION	
C1	22-1006	TWO-GANG VARIABLE	
C2	22-829	.05 MFD.	200V.
C3	22-162	.0001 MFD.	600V.
C4	22-249	.01 MFD.	400V.
C5	22-854	.0005 MFD.	600V.
C6	22-1049	.03 MFD.	400V.
C7	22-1014	20 MFD. ELECTROLYTIC	150V.
C8		20 MFD. ELECTROLYTIC	150V.
C9	22-1017	.05 MFD.	200V.
R1	63-589	10M OHM	½ W.
R2	63-591	22M OHM	½ W.
R3	63-1093	15 MEGOHM	½ W.
R4	63-600	2.2 MEGOHM	½ W.
R5	63-1112	VOLUME CONTROL	
R6	63-597	470M OHM	½ W.
R7	63-686	150 OHM WIREWOUND	½ W.
R8	63-1023	22 OHM WIREWOUND	½ W.
R9	63-713	47M OHM	½ W.

DIAG. NO.	PART NO.	DESCRIPTION
1		WAVEMAGNET ASSEMBLY
2	58326	WAVE TRAP COIL ASSEMBLY
3	58336	OSC. COIL ASSEMBLY
4	95-696	1ST I.F. TRANS.
5	95-697	2ND I.F. TRANS.
6	100-67	PILOT LIGHT 6.3V. .15A.
7	95-713	FILTER CHOKE (300Ω RES.)
A		1ST I.F. TRANS. PRI.
B		1ST I.F. TRANS. SEC.
C		2ND I.F. TRANS. PRI.
D		2ND I.F. TRANS. SEC.
E	22-1015	WAVE TRAP
F		BROADCAST OSC. (ON GANG)
G		BROADCAST ANT. (ON GANG)

CHASSIS	MODEL	SPKR.
6A01	6D510	49-385 4"
6A10	6D525	49-403 4"
6A10	6D526	49-403 4"

All voltages measured with a 20,000 ohm per volt meter from Neg. B to socket contact indicated.

All voltages are positive D.C. unless marked otherwise.

Volume control on full.

Line voltage 117 v. A.C.

Stage Gains:

Ant. to R.F. grid—5.5× at 1000 Kc.

R.F. grid to conv. grid—6.2× at 1000 Kc.

Conv. grid to I.F. grid—51× at 455 Kc.

Overall audio—289× at .25 watt, 400 cycles.

FOR OTHER DATA SEE INDEX

6A01 uses dynamic speaker.

6A08 has phono connections

6A08 and 6A10 use P.M. speaker with choke to replace field winding.

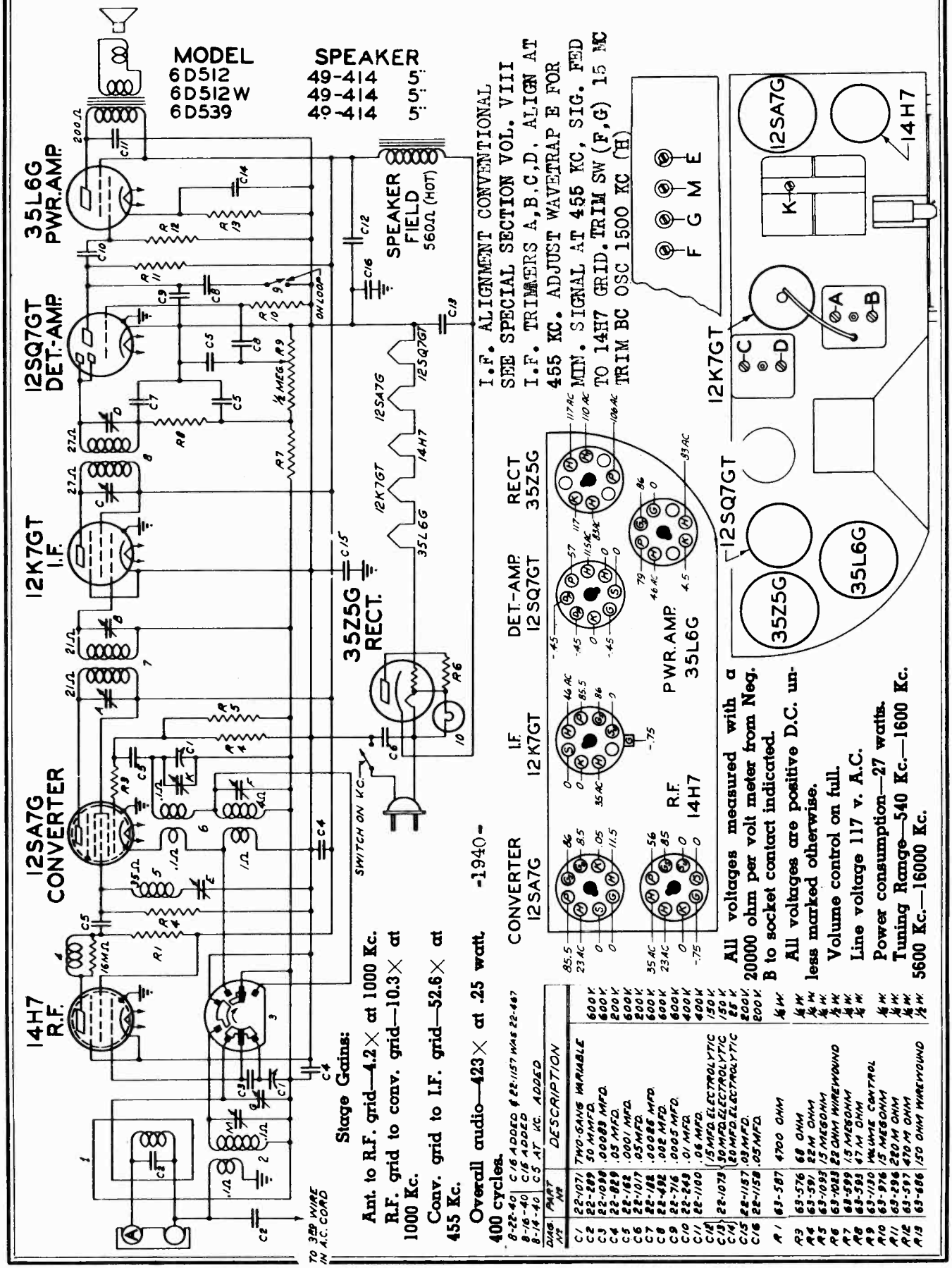
Power consumption—6A01-6A10—25.5 watts.

Power consumption—6A08—40.5 watts.

Power output—1. watt.

MODELS 6D512, 6D512W, 6D539, Ch. 6A16

ZENITH RADIO CORP.



Stage Gains:

Ant. to R.F. grid—4.2× at 1000 Kc.

R.F. grid to conv. grid—10.3× at 1000 Kc.

Conv. grid to I.F. grid—52.6× at 455 Kc.

Overall audio—423× at .25 watt. -1940-400 cycles.

8-22-40 C16 added & 22-1157 was 22-447
8-16-40 C16 added
8-14-40 C5 at I.C. added

DIAG. NO.	PART NO.	DESCRIPTION		
C1	22-1071	TWO-GANG VARIABLE		
C2	22-289	50 MMFD.	600 V.	
C3	22-1038	.00025 MFD.	600 V.	
C4	22-829	.05 MFD.	200 V.	
C5	22-162	.0001 MFD.	600 V.	
C6	22-1017	.05 MFD.	200 V.	
C7	22-182	.0005 MFD.	600 V.	
C8	22-492	.002 MFD.	600 V.	
C9	22-716	.0005 MFD.	600 V.	
C10	22-243	.01 MFD.	400 V.	
C11	22-1100	.06 MFD.	400 V.	
C12	22-1075	.15 MFD. ELECTROLYTIC	150 V.	
C13		30 MFD. ELECTROLYTIC	150 V.	
C14		20 MFD. ELECTROLYTIC	25 V.	
C15	22-1157	.03 MFD.	200 V.	
C16	22-158	.05 MFD.	200 V.	
R1	63-587	4700 OHM	½ W.	
R2	63-576	68 OHM	½ W.	
R3	63-591	22 M OHM	½ W.	
R4	63-1093	.15 MEGOHM	½ W.	
R5	63-1023	22 OHM WIREWOUND	½ W.	
R6	63-599	.15 MEGOHM	½ W.	
R7	63-593	47 M OHM	½ W.	
R8	63-1130	VOLUME CONTROL	½ W.	
R9	63-976	.15 MEGOHM	½ W.	
R10	63-596	220 M OHM	½ W.	
R11	63-597	470 M OHM	½ W.	
R12	63-686	150 OHM WIREWOUND	½ W.	
R13				

All voltages measured with a 20000 ohm per volt meter from Neg. B to socket contact indicated.

All voltages are positive D.C. unless marked otherwise.

Volume control on full.

Line voltage 117 v. A.C.

Power consumption—27 watts.

Tuning Range—540 Kc.—1600 Kc. 5600 Kc.—16000 Kc.

SERVICE NOTES

All chassis

Weak short wave—Open R.F. choke in plate circuit of 1232 tube.
Noisy—Dial rubbing against escutcheon. Stator lugs on braid of gang condenser rubbing against side of opening in chassis. Make sure all loktal type tubes are firmly seated in sockets.

Cannot be aligned—Check for open or rosin connection on primary winding of wavemagnet.

Overloads—Usually due to open resistor in A.V.C. circuit of first detector.

Phono Models

Distortion—Check for broken crystal in pickup.

Low Volume—Check for poor contact in phono switch and plug contacts—check shield on lead from crystal for poor ground.

6A02-6A04

Noisy—right hand pilot light wiring may be pinched by automatic bracket.

Check for poor contact on manual push button.

Check for loose or poor contacts on pilot lights.

Oscillation on short wave band—Push black lead of automatic away from automatic adjustments. Keep white and green leads of automatic away from 7L7-7H7 socket.

7A02-7A04

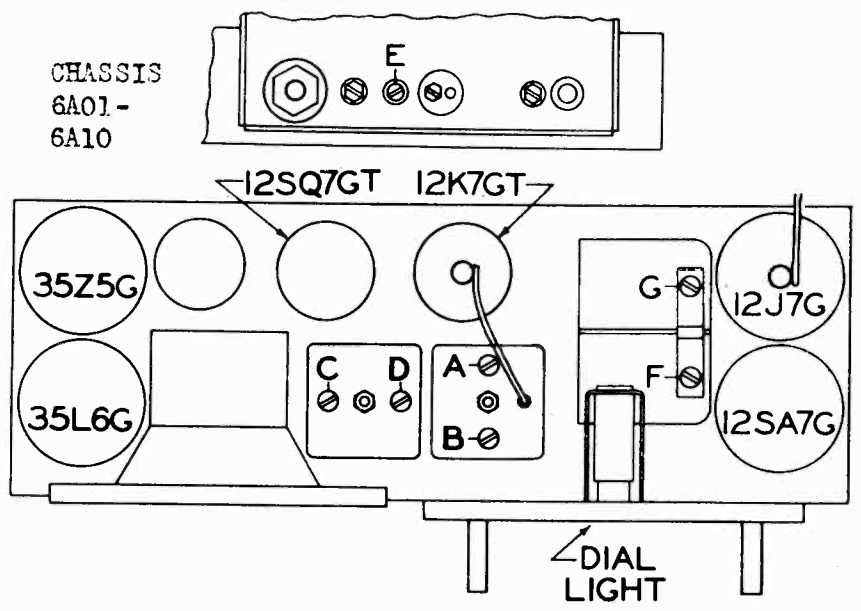
Dead—480 mmfd. condenser on automatic may be grounded against automatic frame or latch bar.

Oscillation—Push leads of wave trap close to chassis keeping them away from antenna coil.

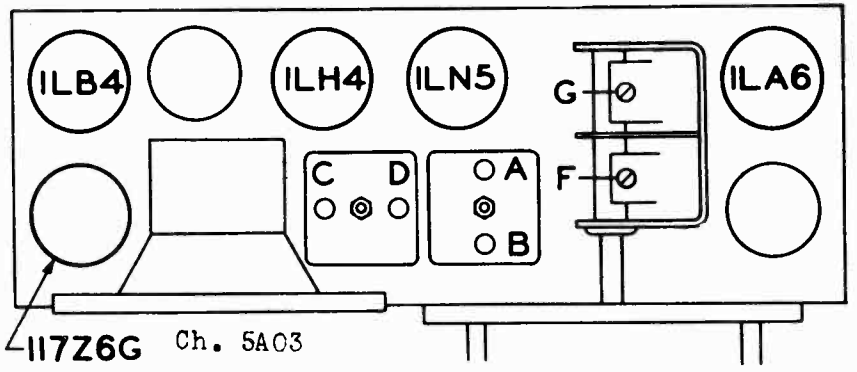
12A3

Hum—Change 6J5 in first audio socket.

ALIGNMENT-CHASSIS 6A01-6A10
PEAK I.F. TRIMMERS A B C D
AT 455 KC. FEED 455-KC SIGNAL
TO R-F GRID AND ADJUST WAVE-
TRAP TRIMMER E FOR MINIMUM
RESPONSE.
TRIM F AT 1600 KC
TRIM G AT 1400 KC

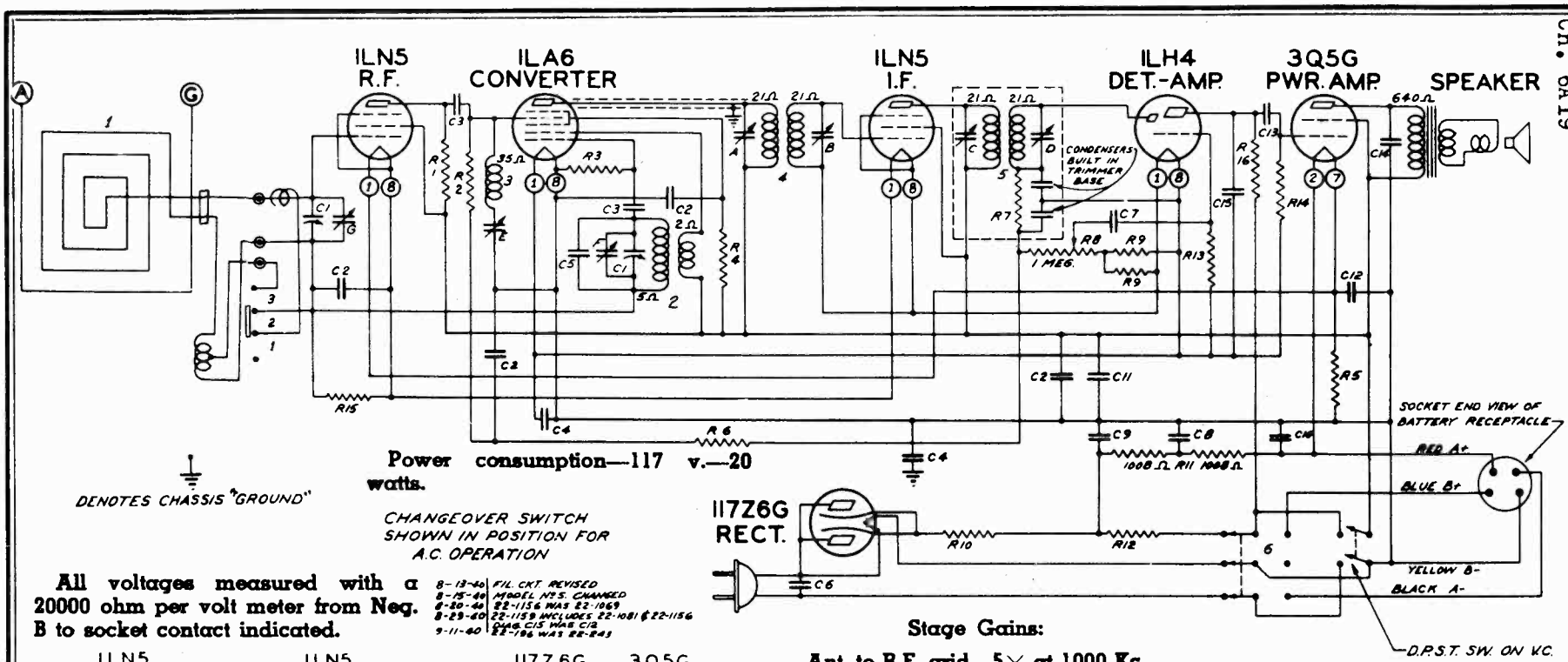


ALIGNMENT-CHASSIS 5A03
PEAK I.F. TRIMMERS A B C D
AT 455 KC. COUPLE TEST OSC-
ILLATOR VIA SINGLE TURN
LOOP LOOSELY TO WAVEMAGNET
AND TRIM F AND G AT 1400 KC



MODELS 6G501F, 6G501M, 6G501L, 6G505, Ch. 6A19

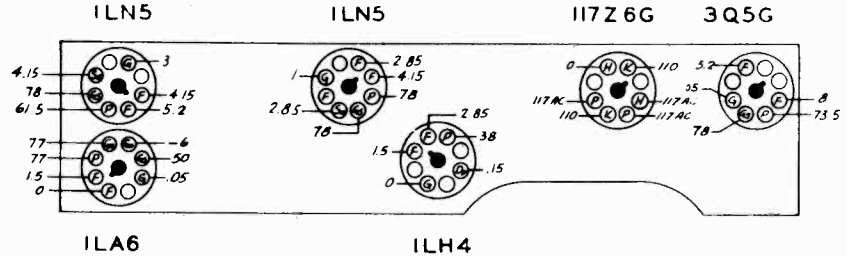
ZENITH RADIO CORP.



Power consumption—117 v.—20 watts.

All voltages measured with a 20000 ohm per volt meter from Neg. B to socket contact indicated.

8-13-40	F/L CKT. REVISED	
8-15-40	MODEL NOS. CHANGED	
8-30-40	22-1156 WAS 22-1069	
8-29-40	22-1159 INCLUDES 22-1081 & 22-1156	
9-11-40	CHAS. C15 WAS C12	
	22-196 WAS 22-243	



Stage Gains:

Ant. to R.F. grid—5× at 1000 Kc.

R.F. grid to conv. grid.—6.5× at 1000 Kc.

Conv. grid to I.F. grid—49.1× at 455 Kc.

Overall audio—322× at .05 watt. 400 cycles.

Tuning Range—540 Kc. to 1570 Kc.

MODEL	SPEAKER
6G501F	49-420 5½"
6G501M	49-420 5½"
6G501L	49-420 5½"
6G505	49-420 5½"

DIAG. Nº	PART Nº	DESCRIPTION		DIAG. Nº	PART Nº	DESCRIPTION		DIAG. Nº	PART Nº	DESCRIPTION
C1	22-1024	TWO GANG VARIABLE		R2	63-595	100 M OHM	½ W.	2	S8374	OSCILLATOR ASSEMBLY
C2	22-829	.05 MFD.	200 V.	R3	63-773	180 M OHM	½ W.	3	S8326	WAVE TRAP ASSEMBLY
C3	22-162	.0001 MFD.	600 V.	R4	63-592	33 M OHM	½ W.	4	95-739	1ST I.F. TRANSFORMER
C4	22-827	.1 MFD.	200 V.	R5	63-1097	870 OHM WIREWOUND	1 W.	5	95-740	2ND I.F. TRANSFORMER
C5	22-988	20 MMFD.	600 V.	R6	63-600	2.2 MEGOHM	½ W.	6	85-224	CHANGEOVER SWITCH
C6	22-869	.05 MFD.	400 V.	R7	63-713	47 M OHM	½ W.	7	85-225	WAVEMAGNET SWITCH
C7	22-492	.002 MFD.	600 V.	R8	63-1121	VOLUME CONTROL				
C8	22-1026	(20 MFD. ELECTROLYTIC	150 V.	R9	63-587	4700 OHM	½ W.			
C9		(40 MFD. ELECTROLYTIC	150 V.	R10	63-1096	140 OHM WIREWOUND	2 W.			
C10		(80 MFD. ELECTROLYTIC	25 V.	R11	63-1132	8-SECTION CANDOHM		A		1ST I.F. TRANS. PRI.
C11	22-1159	(40 MFD. ELECTROLYTIC	150 V.	R12	63-1156	1800 OHM	½ W.	B		1ST I.F. TRANS. SEC.
C12		(40 MFD. ELECTROLYTIC	25 V.	R13	63-1093	15 MEGOHM	½ W.	C		2ND I.F. TRANS. PRI.
C13	22-196	.01 MFD.	600 V.	R14	63-722	2.2 MEGOHM	½ W.	D		2ND I.F. TRANS. SEC.
C14	22-468	.004 MFD.	600 V.	R15	63-325	150 M OHM	½ W.	E	22-1086	WAVE TRAP
C15	22-470	.0001 5 MFD.	600 V.	R16	63-271	1 MEGOHM	½ W.	F		BROADCAST OSC. (ON GANG)
								G		BROADCAST ANT. (ON GANG)
R1	63-590	15 M OHM	½ W.	1	S8984	WAVEMAGNET ASSEM.				

ALIGNMENT

I.F. ALIGNMENT CONVENTIONAL

SEE SPECIAL SECTION VOL. VIII

WAVETRAP (E)

ADJUST FOR MINIMUM RESPONSE

FEEDING 455 KC SIGNAL TO MIXER GRID

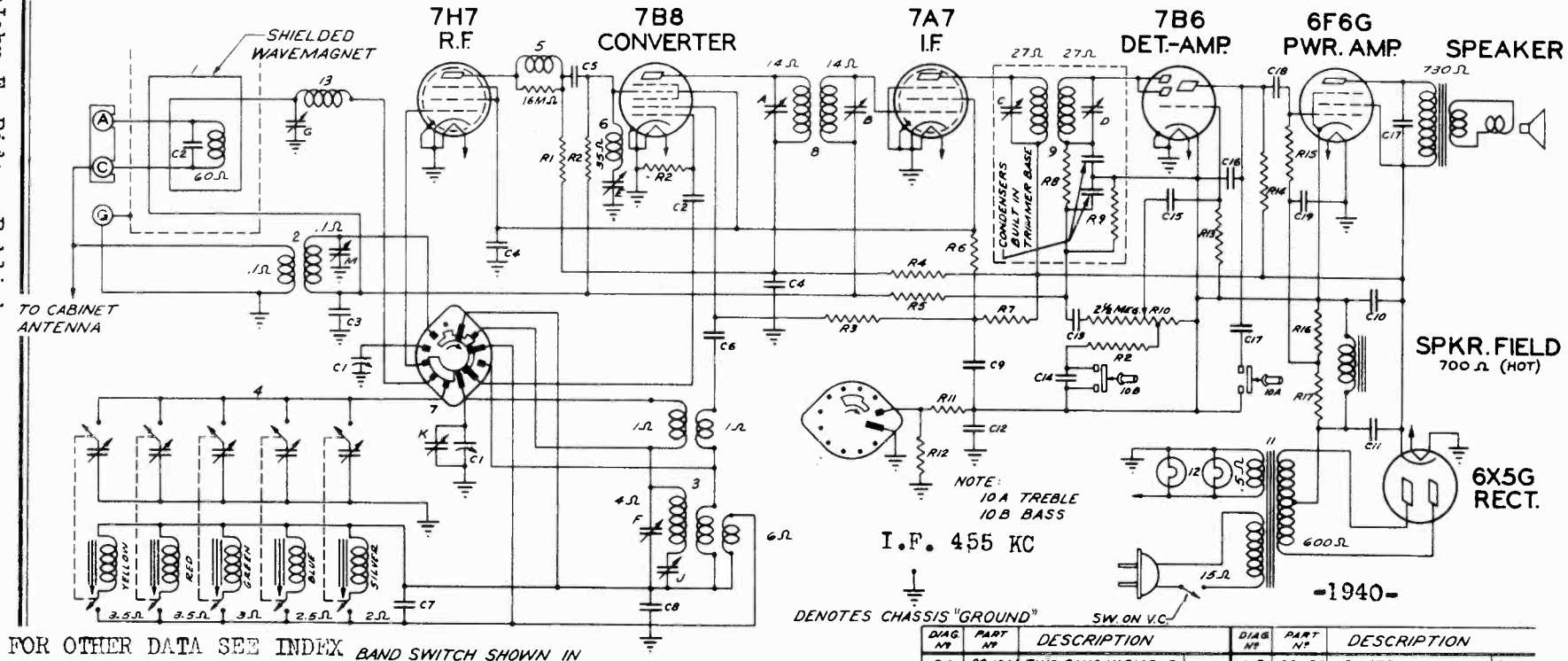
TRIM OSC-ANT AT 1400 KC

110V. A.C.-D.C.-BATTERY PACK

UNIVERSAL PORTABLE

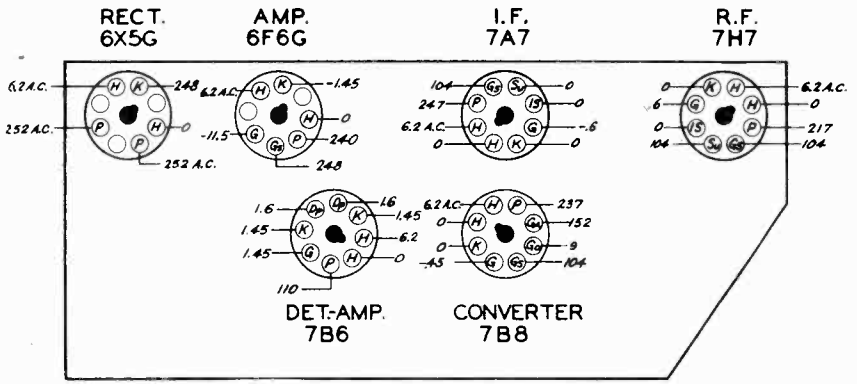
I.F. FREQUENCY 455KC.

ZENITH RADIO CORP. MODELS 6S546, 6S556 Ch. 6A05



FOR OTHER DATA SEE INDEX

BAND SWITCH SHOWN IN AUTOMATIC POSITION



All voltages measured with a 20,000 ohm per volt meter from chassis to socket contact indicated.

All voltages are positive D.C. unless marked otherwise.

Volume control full on.

Line voltage 117 A.C.

Power consumption—60 watts.

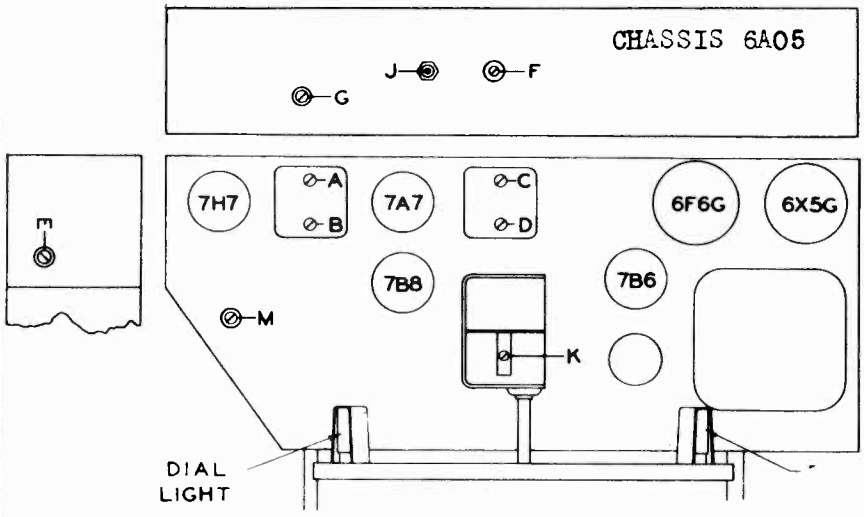
Power output—6 watts.

DIAG. Nº	PART Nº	DESCRIPTION		DIAG. Nº	PART Nº	DESCRIPTION	
C 1	22-1044	TWO GANG VARIABLE		C 19	22-138	.2 MFD.	200 V.
C 2	22-289	50 MMFD.	600 V.				
C 3	22-829	.05 MFD.	200 V.				
C 4	22-828	.05 MFD.	400 V.				
C 5	22-162	.0001 MFD.	600 V.	R 1	63-637	4700 OHM	½ W.
C 6	22-182	.00025 MFD.	600 V.	R 2	63-593	47 M OHM	½ W.
C 7	22-868	COMPENSATING COND.		R 3	63-150	10 M OHM	½ W.
C 8	22-1022	.005 MFD.	600 V.	R 4	63-583	1000 OHM	½ W.
C 9	22-1034	5 MFD. ELECTROLYTIC	450 V.	R 5	63-599	1.5 MEGOHM	½ W.
C 10		15 MFD. "	350 V.	R 6	63-1102	15 M OHM	½ W.
C 11	22-1036	14 MFD. "	450 V.	R 7	63-1101	8200 OHM	2 W.
C 12	22-827	.1 MFD.	200 V.	R 8	63-713	47 M OHM	½ W.
C 13	22-188	.02 MFD.	400 V.	R 9	63-719	470 M OHM	½ W.
C 14	22-829	.005 MFD.	600 V.	R 10	63-1123	VOLUME CONTROL	
C 15	22-492	.002 MFD.	600 V.	R 11	63-1098	42 OHM WIREWOUND	1 W.
C 16	22-854	.0005 MFD.	600 V.	R 12	63-624	68 OHM	½ W.
C 17	22-448	.004 MFD.	600 V.	R 13	63-976	15 MEGOHM	½ W.
C 18	22-830	.02 MFD.	600 V.	R 14	63-296	220 M OHM	½ W.
R 15	63-597	470 M OHM	½ W.	13	58474	LOOP LOADING COIL	
R 16	63-654	180 M OHM	½ W.	A		1ST I.F. TRANS. PRI.	
R 17	63-656	270 M OHM	½ W.	B		1ST I.F. - SEC.	
				C		2ND I.F. - PRI.	
1		WAVEMAGNET ASSEMBLY		D		2ND I.F. - SEC.	
2	S8507	ANTENNA COIL ASSEMBLY		E	22-1015	WAVE TRAP	
3	S8508	OSCILLATOR COIL ASSEMBLY		F	22-1042	BROADCAST OSCILLATOR	
4	S8457	AUTOMATIC TUNING UNIT		G	22-1042	BROADCAST ANTENNA	
5	S8359	R.F. CHOKE & RES. ASSEMBLY		J	22-1023	BROADCAST PADDER	
6	S8326	WAVE TRAP ASSEMBLY		K		SHORT WAVE OSC (ON GANG)	
7	85-233	BAND SELECTOR SWITCH		M	22-1042	SHORT WAVE ANTENNA	
8	95-708	1ST I.F. TRANSFORMER					
9	95-709	2ND I.F. TRANSFORMER					
10	S8531	TONE CONTROL SWITCH					
11	95-710	POWER TRANS. 50-60 ~ 117 V.					
12	100-36	PILOT LIGHT 6.3 V. .25 A.					

MODEL	SPEAKER
6S546	49-388 6"
6S556	49-390 10"

Ch. 6A05
Ch. 10A3

ZENITH RADIO CORP.



CHASSIS 6A05

Stage Gains

Ant. to R.F. grid—3.8× at 1000 Kc.

R.F. grid to conv. grid—7× at 1000 Kc.

Conv. grid to I.F. grid—92× at 455 Kc.

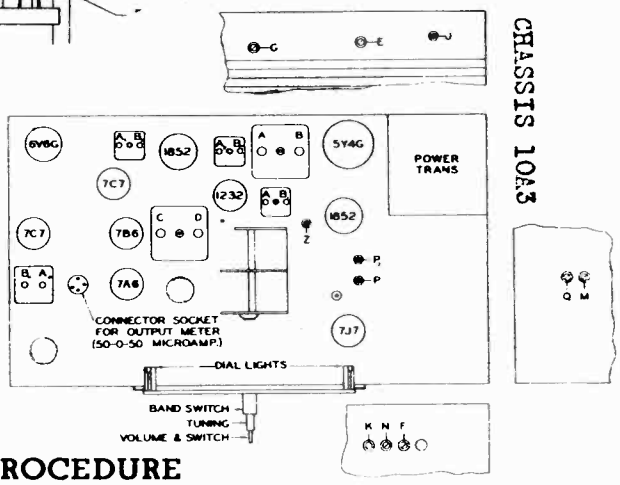
Overall audio—778× at 1 watt 400 cycles.

Tuning ranges— 545 Kc.— 1570 Kc.
5700 Kc.—18300 Kc.

ALIGNMENT

CHASSIS 6A05

I.F. ALIGNMENT CONVENTIONAL
SEE SPECIAL SECTION VOL VIII
I.F. TRIMMERS A B C D
PEAK AT 455 KC
WITH 455-KC SIGNAL AT R-F GRID. ADJUST E FOR MINIMUM RESPONSE.
TRIM K AT 18 MC
TRIM M at 16 MC
TRIM F, G AT 1500 KC
PAD J AT 600 KC



ALIGNMENT PROCEDURE

CHASSIS 10A3

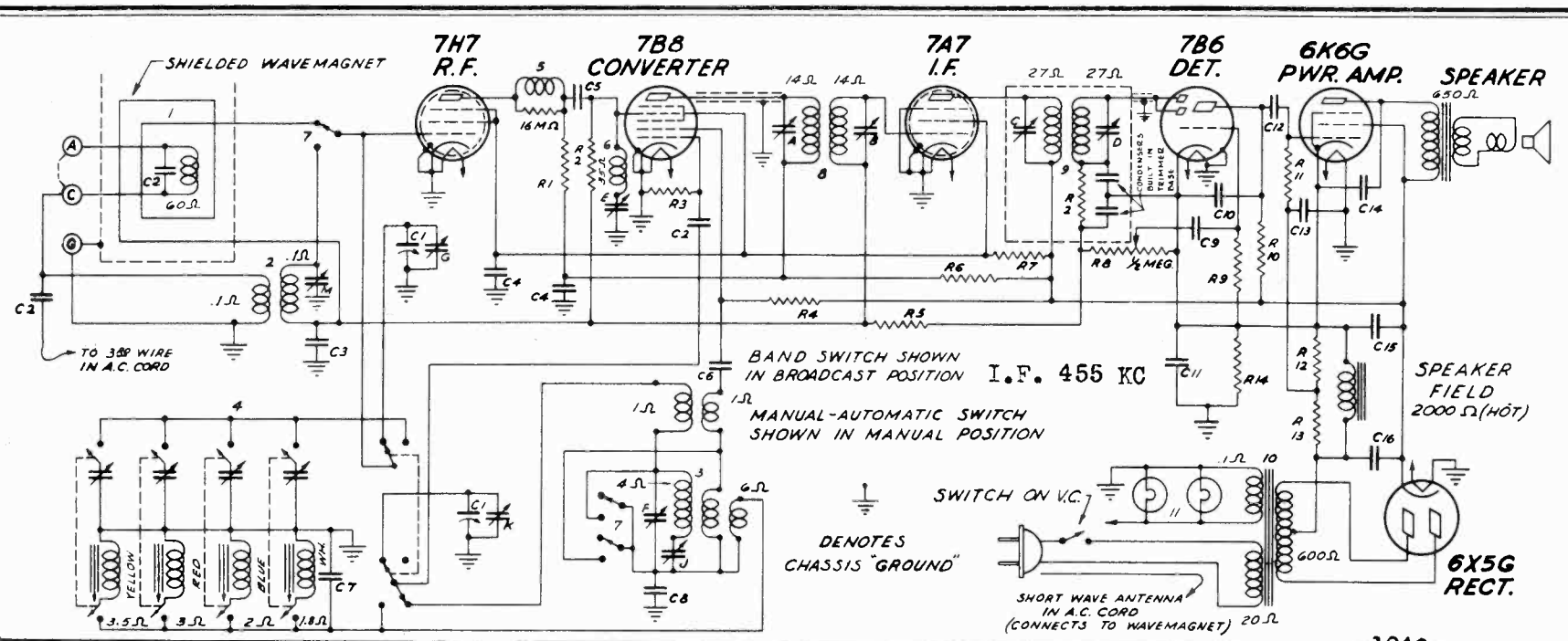
Operation	Connect Test Oscillator to	Dummy Antenna	Input Signal Frequency	Band	Set Dial At	Connect Output Meter to	Trimmers	Purpose
1	Con. Grid	0.5 Mfd.	455 Kc.	B.C.	600 Kc.	6V6G Output	A B C D	Align I.F.
2	R.F. Grid	0.5 Mfd.	455 Kc.	B.C.	600 Kc.	6V6G Output	E	I.F. Trap Adjust for Minimum
3	Ant. terminals marked Z and G	400 Ohms	18 Mc.	S.W.	18 Mc.	"	K	Set to Scale
4	"	"	16 Mc.	S.W.	16 Mc.	"	M	Align Ant.
5	"	"	5.0 Mc.	Med.	5.0 Mc.	"	N	Set to Scale
6	"	"	4.5 Mc.	Med.	4.5 Mc.	"	Q	Align Ant.
7	Single turn Loop Loosely coupled to loop		1400 Kc.	B.C.	1400 Kc.	"	F	Set Osc. to Scale
8	"		1400	B.C.	1400 Kc.	"	G	Align Ant.
9	"	"	600 Kc.	B.C.	600 Kc.	"	J (Rock Gang)	Broadcast Padder
10	1852 Grid	0.5 Mfd.	4.3 Mc.	Manual F.M.	4.3 Mc.	F.M. Output Meter Across Full Disc. Load	B4	Align for Zero Deflection
11	"	"	"	"	"	F.M. Output Meter Across Half Disc. Load	A4	Align for Max. Deflection
12	"	"	"	"	"	"	A3B3	"
13	7G7 1232 Grid	"	"	"	"	"	A2B2	"
14	7J7 Grid	"	"	"	"	"	A B	"
15	F.M. Ant. Terminals	100 Ohms	46.0 Mc.	"	46.0 Mc.	"	Adjust cam on gang shaft for scale	"
16	"	"	42.5 Mc.	"	42.5 Mc.	"	P	"
17	"	"	49 Mc.	"	49 Mc.	"	P2	"
18	"	"	46 Mc.	"	46 Mc.	"	Z	"

During F.M. Alignment keep input low, to obtain max. sensitivity for alignment. This is necessary because with large inputs the limiting action of the limiters masks alignment operations.

NOTE A 10M ohm per volt or higher voltmeter may be used as an F.M. output meter.

ZENITH RADIO CORP.

MODEL 6S511, Ch. 6A13
MODELS 6S527, 6S528, Ch. 6A02
MODEL 6S580, Ch. 6A04



DIAG. NO	PART NO	DESCRIPTION	
C1	22-1007	TWO GANG VARIABLE	
C2	22-289	50 MMFD.	600 V.
C3	22-829	.05 MFD.	200 V.
C4	22-828	.05 MFD.	400 V.
C5	22-162	.0001 MFD.	600 V.
C6	22-182	.00025 MFD.	600 V.
C7	22-868	COMPENSATING COND.	
C8	22-1022	.005 MFD.	600 V.
C9	22-492	.002 MFD.	600 V.
C10	22-716	.0005 MFD.	600 V.
C11	22-827	.1 MFD.	200 V.
C12	22-830	.02 MFD.	600 V.
C13	22-219	.03 MFD.	200 V.
C14	22-448	.004 MFD.	600 V.
C15 C16	22-1029	10 MFD. ELECTROLYTIC 15 MFD. "	250 V. 350 V.

DIAG. NO	PART NO	DESCRIPTION	
R1	63-757	4700 OHM	¼ W.
R2	63-713	.47 M OHM	¼ W.
R3	63-593	.47 M OHM	¼ W.
R4	63-1054	10 M OHM	½ W.
R5	63-599	1.5 MEGOHM	¼ W.
R6	63-703	1000 OHM	¼ W.
R7	63-151	15 M OHM	1 W.
R8	63-1118	VOLUME CONTROL	
R9	63-976	15 MEGOHM	¼ W.
R10	63-296	220 M OHM	¼ W.
R11	63-597	470 M OHM	¼ W.
R12	63-260	100 M OHM	¼ W.
R13	63-659	470 M OHM	¼ W.
R14	63-1098	42 OHM WIREWOUND	½ W.

DIAG. NO	PART NO	DESCRIPTION
1	S 8376	WAVEMAGNET ASSEMBLY
2	S 8347	ANTENNA COIL ASSEM.
3	S 8348	OSCILLATOR COIL ASSEM.
4	S 8384	AUTOMATIC TUNING ASSEM.
5	S 8359	R.F. CHOKE & RES. ASSEM.
6	S 8326	WAVETRAP COIL ASSEM.
7	85-223	BAND SELECTOR SWITCH
8	95-698	1ST I.F. TRANSFORMER
9	95-699	2ND I.F. TRANSFORMER
10	95-700	PWR. TRANS. 50-60~ 117 V.
11	100-67	PILOT LIGHT 6.3 V. .15 A.

DIAG. NO	PART NO	DESCRIPTION
A		1ST I.F. TRANS. PRI.
B		1ST I.F. " SEC.
C		2ND I.F. " PRI.
D		2ND I.F. " SEC.
E	22-1015	WAVETRAP
F	22-1011	BROADCAST OSC.
G		B'DCAST ANT. (ON GANG)
J	22-1023	B'DCAST PADDER
K		SHORT WAVE OSC. (ON GANG)
M	22-1011	SHORT WAVE ANTENNA

-1940-

MODEL	SPEAKER	
6S 511	49-384	5"
6S 527	49-384	5"
6S 528	49-384	5"

All voltages measured with a 20,000 ohm per volt meter from chassis to socket contact indicated.

All voltages are positive D.C. unless marked otherwise.

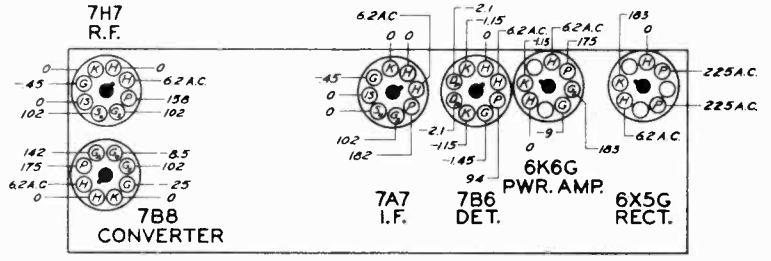
Volume control full on.

Line voltage 117 A.C.

Power consumption 6A02-6A13-6A14—40 watts.

Power consumption 6A04 — 55 watts.

Power output—2.6 watts.



Tuning ranges—545 Kc.—1570 Kc.
—5400 Kc.—18500 Kc.

FOR ALIGNMENT, TRIMMERS, P.B. DATA SEE INDEX

Stage Gains:

Ant. to R.F. grid—3.8× at 1000 Kc.

R.F. grid to conv. grid—10× at 1000 Kc.

Conv. grid to I.F. grid—71× at 455 Kc.

Overall audio—594× at .25 watt, 400 cycles.

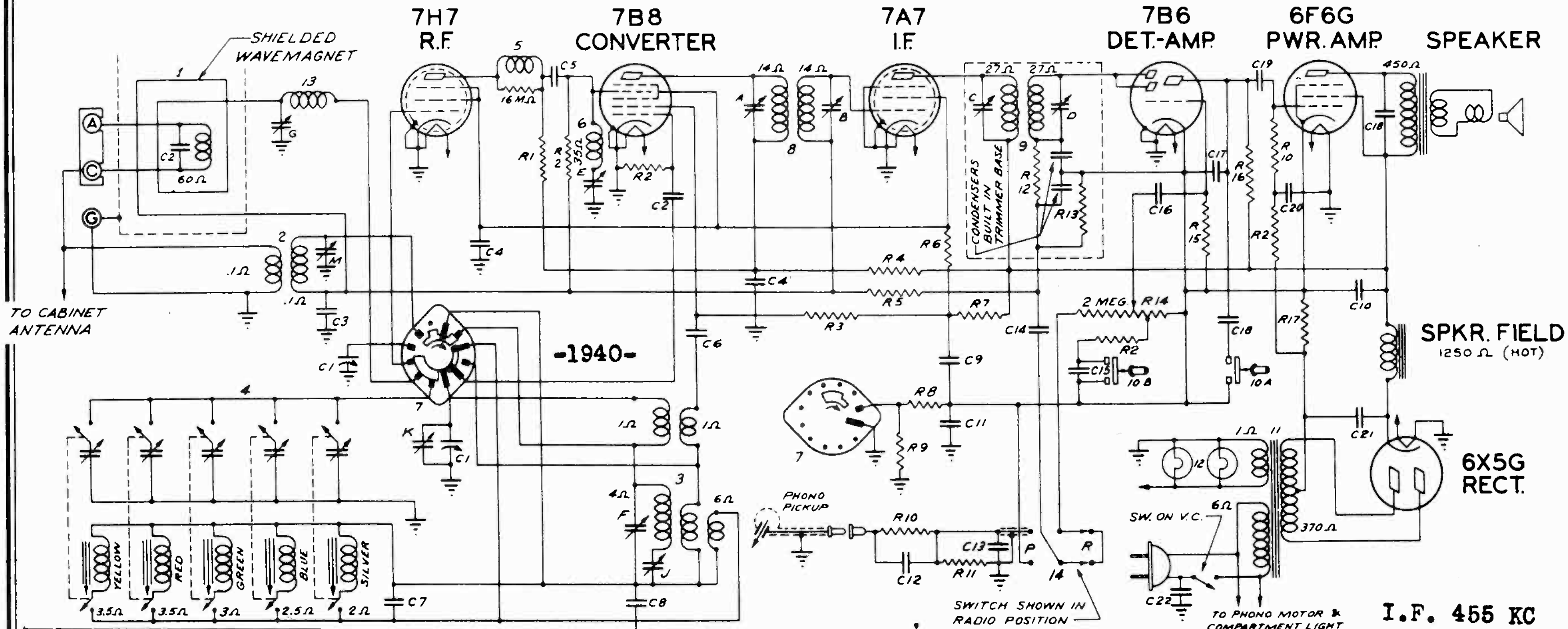
NOTE

Chassis 6A04 has phono connections added

Chassis 6A13 and 6A14 are identical with 6A02 except for color of automatic knobs.

MODELS 6S596, 6S597
Ch. 6A20

ZENITH RADIO CORP.



I.F. 455 KC

NOTE
10A TREBLE
10B BASS

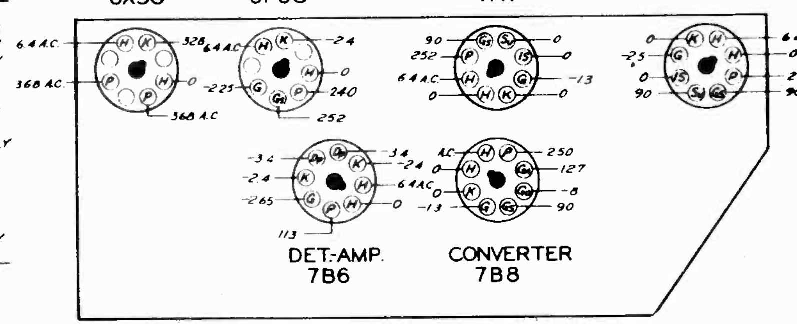
FOR ALIGNMENT SEE INDEX

DENOTES CHASSIS "GROUND"

BAND SWITCH SHOWN IN AUTOMATIC POSITION

DIAG. No.	PART No.	DESCRIPTION	
C1	22-1044	TWO GANG VARIABLE	
C2	22-289	50 MMFD.	600 V.
C3	22-829	.05 MFD.	200 V.
C4	22-828	.05 MFD.	400 V.
C5	22-162	.0001 MFD.	600 V.
C6	22-182	.00025 MFD.	600 V.
C7	22-868	COMPENSATING COND.	
C8	22-1022	.005 MFD.	600 V.
C9 } C10 }	22-1034	{ 5 MFD. ELECTROLYTIC { 15 MFD. "	450 V. / 350 V.
C11	22-827	.1 MFD.	200 V.
C12	22-470	.00015 MFD.	600 V.
C13	22-147	.0005 MFD.	600 V.
C14	22-188	.02 MFD.	400 V.
C15	22-229	.005 MFD.	600 V.
C16	22-492	.002 MFD.	600 V.
C17	22-854	.0005 MFD.	600 V.
C18	22-448	.004 MFD.	600 V.
C19	22-830	.02 MFD.	600 V.
C20	22-219	.03 MFD.	200 V.
C21	22-1036	14 MFD. ELECTROLYTIC	450 V.
C22	22-1041	.005 MFD.	600 V.
R1	63-637	4700 OHM	1/4 W.
R2	63-593	47 M OHM	1/4 W.
R3	63-150	10 M OHM	1/2 W.
R4	63-583	1000 OHM	1/4 W.
R5	63-599	1.5 MEGOHM	1/4 W.
R6	63-1102	15 M OHM	1/2 W.
R7	63-1101	8200 OHM	2 W.
R8	63-1098	42 OHM WIREWOUND	1/2 W.
R9	63-624	68 OHM	1/4 W.
R10	63-597	470 M OHM	1/4 W.
R11	63-596	330 M OHM	1/4 W.
R12	63-713	47 M OHM	1/4 W.
R13	63-719	470 M OHM	1/4 W.

DIAG. No.	PART No.	DESCRIPTION	
R14	63-1123	VOLUME CONTROL	
R15	63-976	15 MEGOHM	1/4 W
R16	63-296	220 M OHM	1/4 W
R17	63-1056	280 OHM WIREWOUND	1 1/2 W
1		WAVEMAGNET ASSEMBLY	
2	S8507	ANTENNA COIL ASSEMBLY	
3	S8508	OSCILLATOR COIL ASSEMBLY	
4	S8457	AUTOMATIC TUNING UNIT	
5	S8359	R F CHOKE & RES ASSEMBLY	
6	S8326	WAVE TRAP ASSEMBLY	
7	85-255	BAND SELECTOR SWITCH	
8	95-708	1ST I.F. TRANSFORMER	
9	95-709	2ND I.F. TRANSFORMER	
10	S8531	TONE CONTROL SWITCH	
11	95-705	POWER TRANS 50-60~ 117 V	
12	100-36	PILOT LIGHT 6.3 V .25 A.	
13	S8474	LOOP LOADING COIL	
14	85-171	PHONO-RADIO SWITCH	
A		1ST I.F. TRANS. PRI.	
B		1ST I.F. " SEC.	
C		2ND I.F. " PRI.	
D		2ND I.F. " SEC.	
E	22-1015	WAVE TRAP	
F	22-1042	BROADCAST OSCILLATOR	
G	22-1042	BROADCAST ANTENNA	
J	22-1023	BROADCAST PADDER	
K		SHORT WAVE OSC (ON GANG)	
M	22-1042	SHORT WAVE ANTENNA	



All voltages measured with a 20,000 ohm per volt meter from chassis to socket contact indicated.

Volume control on full.

Line voltage 117 v. A.C.

MODEL	SPEAKER
6S596	49-396 10"
6S597	49-380 10"

Power consumption—55 watts.

Power output—6 watts.

Stage Gains:

Ant. to R.F. grid—5.2× at 1000 Kc.

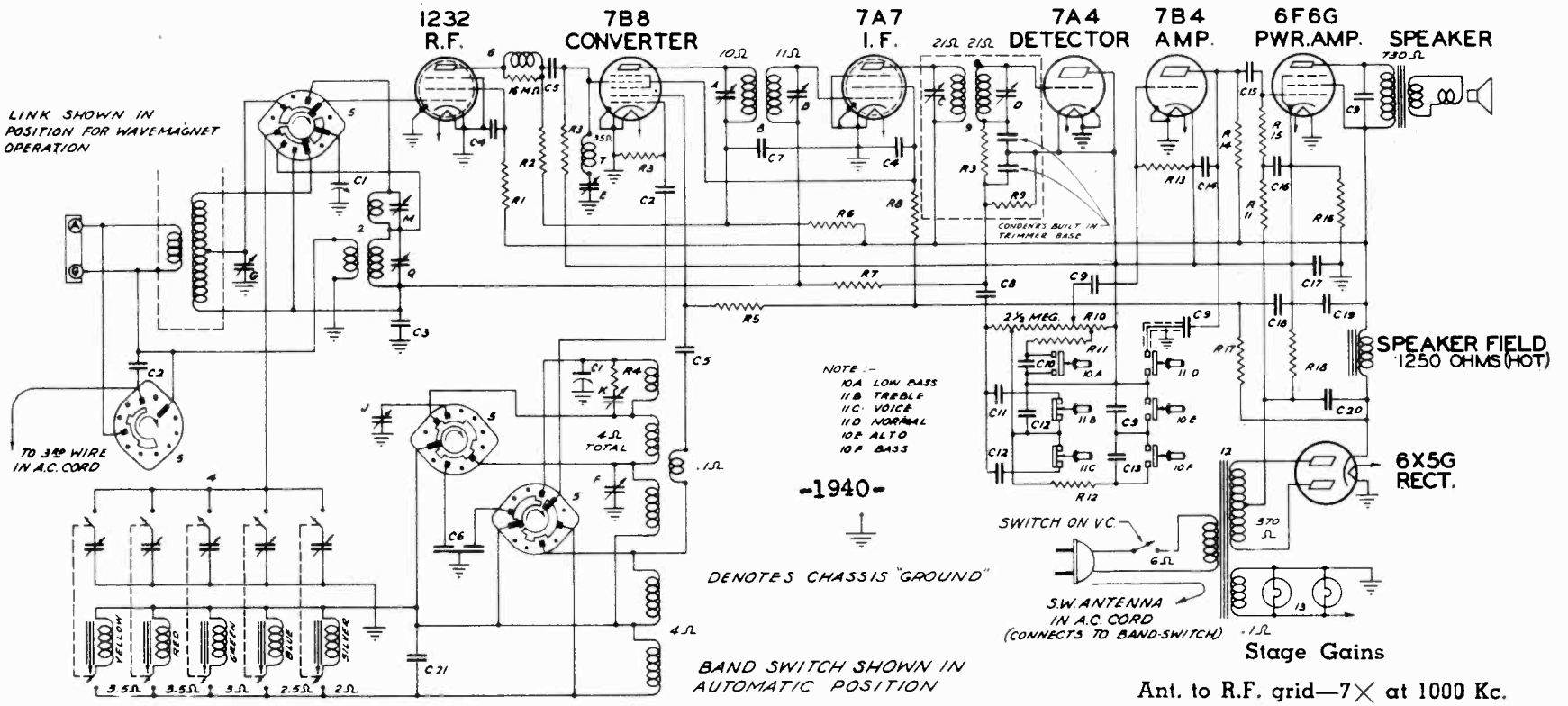
R.F. grid to conv. grid—5.9× at 1000 Kc.

Conv. grid to I.F. grid—57.5× at 455 Kc.

Overall audio—735× at 1 watt, 400 cycles.

ZENITH RADIO CORP.

MODELS 7S529, 7S530, 7S547, 7S557, 7S558, 7S559, Ch. 7A02



FOR OTHER DATA SEE INDEX

DIAG. NO.	PART NO.	DESCRIPTION		DIAG. NO.	PART NO.	DESCRIPTION		DIAG. NO.	PART NO.	DESCRIPTION	DIAG. NO.	PART NO.	DESCRIPTION
C1	22-1030	TWO GANG VARIABLE		C21	22-868	COMPENSATING COND.		R17	63-972	15 M OHM 1 W	A		1ST I.F. TRANS. PRI.
C2	22-389	50 MMFD.	600 V.					R18	63-1056	280 OHM WIREWOUND 1½ W	B		1ST I.F. " SEC.
C3	22-839	.05 MFD.	200 V.								C		2ND I.F. " PRI.
C4	22-828	.05 MFD.	400 V.								D		2ND I.F. " SEC.
C5	22-182	.00025 MFD.	600 V.	R1	63-260	100 M OHM	½ W.				E	22-1015	WAVETRAP
C6	22-1037	DUAL PADDER	600 V.	R2	63-587	4700 OHM	½ W.	1		WAVEMAGNET ASSEMBLY	F		BROADCAST OSC. (NOTE 1)
C7	22-826	.1 MFD.	400 V.	R3	63-713	47 M OHM	½ W	2	58404	ANTENNA COIL ASSEMBLY	G		" ANT. (NOTE 2)
C8	22-327	.02 MFD.	200 V.	R4	63-621	39 OHM	½ W	3	58403	OSCILLATOR COIL ASSEM.	J		" PADDER (NOTE 2)
C9	22-448	.004 MFD.	600 V.	R5	63-589	10 M OHM	½ W	4	58457	AUTOMATIC TUNING ASSEM.	K		SHORT WAVE OSC. (NOTE 1)
C10	22-229	.005 MFD.	600 V.	R6	63-605	1000 OHM	½ W	5	85-226	BAND SELECTOR SWITCH	M		" " ANT. (NOTE 2)
C11	22-954	.00035 MFD.	600 V.	R7	63-599	1.5 MEGOHM	½ W	6	58359	R.F. CHOKE & RES. ASSEM.	Q		POLICE BAND ANT. (NOTE 2)
C12	22-470	.00015 MFD.	600 V.	R8	63-980	68 M OHM	½ W	7	58326	WAVE TRAP COIL ASSEM.			
C13	22-492	.002 MFD.	600 V.	R9	63-719	470 M OHM	¼ W	8	95-703	1ST I.F. TRANSFORMER			NOTES:
C14	22-854	.0005 MFD.	600 V.	R10	63-1132	VOLUME CONTROL		9	95-704	2ND I.F. TRANSFORMER			(1) TRIMMERS F & K ARE MOUNTED ON STRIP #22-1033
C15	22-830	.02 MFD.	600 V.	R11	63-593	47 M OHM	½ W.	10	58449	TONE CONTROL ASSEM. (LEFT)			(2) TRIMMERS G, J, M & Q ARE MOUNTED ON STRIP #22-1031
C16	22-219	.03 MFD.	200 V.	R12	63-594	68 M OHM	½ W	11	58449	TONE CONTROL ASSEM. (RIGHT)			
C17	22-827	.1 MFD.	200 V.	R13	63-976	15 MEGOHM	½ W.	12	95-705	PWR. TRANS. 50-60~ 117 V.			
C18	22-1034	5 MFD. ELECTROLYTIC	450 V.	R14	63-296	220 M OHM	½ W	13	100-36	PILOT LIGHT 6.3 V. .25 A.			
C19		16 MFD. "	350 V.	R15	63-597	470 M OHM	½ W.						
C20	22-1036	16 MFD. "	450 V.	R16	63-975	82 OHM WIREWOUND	½ W.						

Stage Gains

Ant. to R.F. grid—7× at 1000 Kc.

R.F. grid to conv. grid—10.7× at 1000 Kc.

Conv. grid to I.F. grid—66× at 455 Kc.

Overall audio—923× at 1 watt 400 cycles.

I.F. FREQUENCY 455 K.C.

Power consumption—7A02—60 watts.

Power consumption—7A04—80 watts.

Power output—6.5 watts.

Ch. 7A02, 7A04
Ch. 8A02, 8A03
Ch. 12A3, 12A4

ZENITH RADIO CORP.

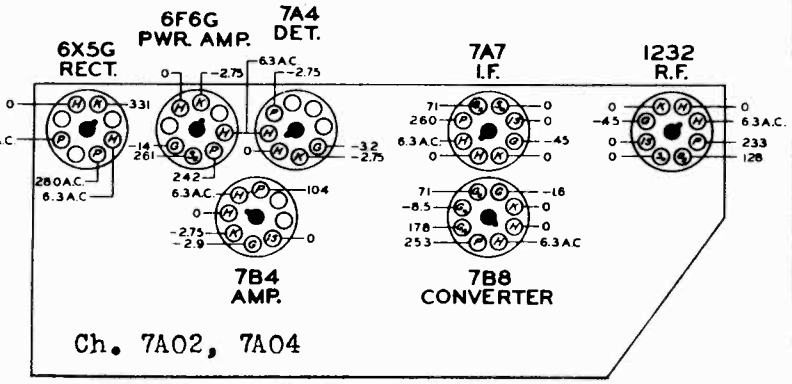
SOCKET VOLTAGES AND ALIGNMENT CHASSIS 7A02-7A04

All voltages measured with a 20,000 ohm per volt meter from chassis to socket contact indicated.

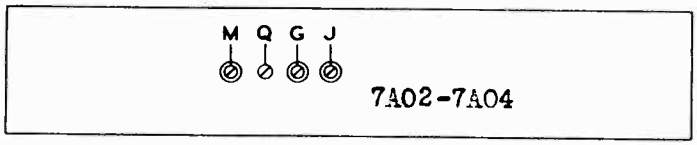
All voltages are positive D.C. unless marked otherwise.

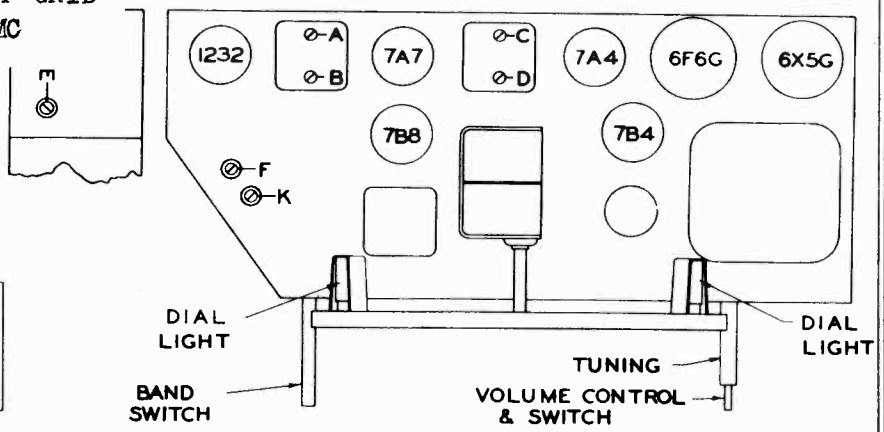
Volume control full on.

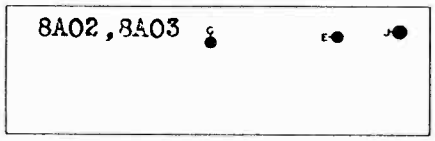
Line voltage 117 A.C.

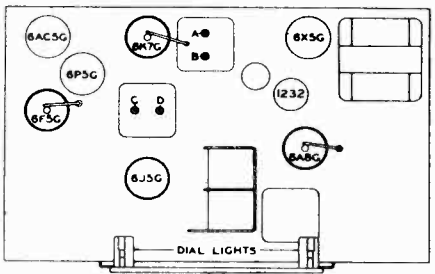


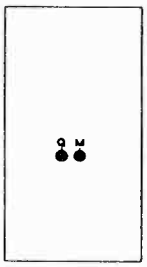
I.F. ALIGNMENT CONVENTIONAL
SEE SPECIAL SECTION VOL. VIII
I.F. 455 KC. ADJUST A B C D
ADJUST WAVETRAP E FOR MIN. SIGNAL AT 455 KC; SIGNAL FED TO RF GRID
TRIM K AT 18 MC; M AT 16 MC
TRIM Q AT 4.5 MC
TRIM F AT 15))
TRIM F AT 1500 KC
TRIM G AT 1400 KC
PAD J AT 600 KC

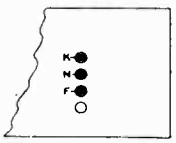












ALIGNMENT-CHASSIS 8A02.8A03
I.F. ALIGNMENT CONVENTIONAL
SEE SPECIAL SECTION VOL. VIII
I.F. 455 KC -ADJUST A B C D
WAVETRAP E-ADJUST FOR MINIMUM SIGNAL at 455 KC
TRIM K AT 18 MC
TRIM M AT 16 MC
TRIM N,Q AT 4.5 MC
TRIM F AT 1500 KC
TRIM G AT 1400 KC
PAD J AT 600 KC

Models 12S550-12S568-12S569-12S595

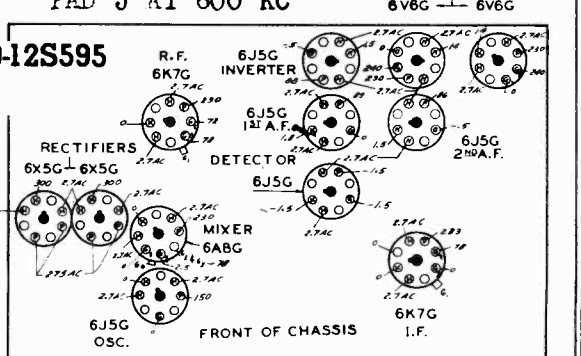
Chassis 12A3-12A4

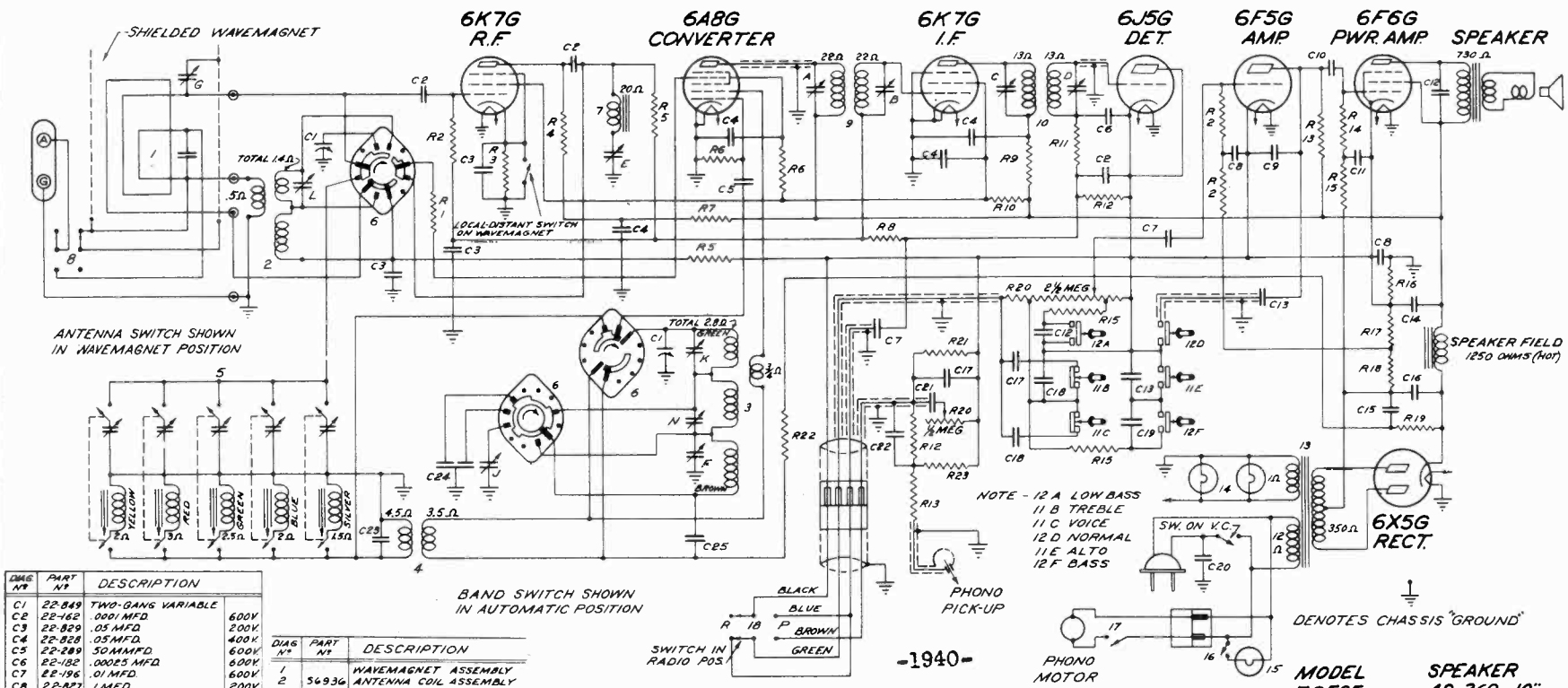
All voltages measured with a 1000 ohm per volt meter from chassis to socket contact indicated.

All voltages are positive D.C. unless marked otherwise.

Volume control full on.

Line voltage 117 v.





DIAG Nº	PART Nº	DESCRIPTION	
C1	22-849	TWO-GANG VARIABLE	
C2	22-162	.0001 MFD.	600V
C3	22-829	.05 MFD.	200V
C4	22-828	.05 MFD.	400V
C5	22-289	50 MMFD.	600V
C6	22-182	.00025 MFD.	600V
C7	22-196	.01 MFD.	600V
C8	22-827	.1 MFD.	200V
C9	22-716	.0005 MFD.	600V
C10	22-830	.02 MFD.	600V
C11	22-219	.03 MFD.	200V
C12	22-229	.005 MFD.	600V
C13	22-448	.004 MFD.	600V
C14	22-719	.16 MFD. ELECTROLYTIC	350V
C15	22-941	.5 MFD. "	450V
C16		.25 MFD. "	450V
C17	22-954	.00035 MFD.	600V
C18	22-470	.00015 MFD.	600V
C19	22-492	.002 MFD.	600V
C20	22-525	.005 MFD.	1000V
C21	22-326	.003 MFD.	400V
C22	22-953	.0002 MFD.	600V
C23	22-868	COMPENSATING COND.	
C24	22-853	DUAL OSC. PADDER	
C25	22-358	.002 MFD.	600V
R1	63-577	100 OHM	1/2 W.
R2	63-271	1 MEGOHM	1/2 W.
R3	63-588	6800 OHM	1/2 W.
R4	63-607	1.5M OHM	1/2 W.
R5	63-595	100M OHM	1/2 W.
R6	63-592	33M OHM	1/2 W.
R7	63-705	2200 OHM	1/2 W.
R8	63-599	1.5 MEGOHM	1/2 W.
R9	63-583	1000 OHM	1/2 W.
R10	63-676	27M OHM	1 W.
R11	63-713	47M OHM	1/2 W.
R12	63-719	470M OHM	1/2 W.
R13	63-296	220M OHM	1/2 W.
R14	63-597	47OM OHM	1/2 W.
R15	63-593	47M OHM	1/2 W.
R16	63-1027	47 OHM WIREWOUND	1/2 W.
R17	63-1066	18 OHM "	1/2 W.
R18	63-1056	280 OHM "	1/2 W.
R19	63-1055	22M OHM	1 W.
R20	63-1115	VOLUME CONTROL	
R21	63-464	1 MEGOHM	1/2 W.
R22	63-1054	10 M OHM	1/2 W.
R23	63-717	220M OHM	1/2 W.

DIAG Nº	PART Nº	DESCRIPTION
1		WAVEMAGNET ASSEMBLY
2	54936	ANTENNA COIL ASSEMBLY
3	56937	OSCILLATOR COIL ASSEM.
4	56998	OSC. COUPLER COIL ASSEM.
5	57044	AUTOMATIC TUNING ASSEM.
6	85-205	BAND SELECTOR SWITCH
7	57500	WAVE TRAP COIL ASSEM.
8	85-171	WAVEMAGNET SWITCH
9	95-600	1ST I.F. TRANSFORMER
10	95-695	2ND I.F. TRANSFORMER
11	58132	TONE CONTROL ASSEM.(LEFT)
12	57422	TONE CONTROL ASSEM.(RIGHT)
13	95-634	PWR. TRANS. 117 V. 50-60~
14	100-36	PILOT LIGHT 6.3 V. .25 A.
15	100-80	PHONO LIGHT 110V. 7W.
16	85-204	DOOR SWITCH
17	85-191	MOTOR SWITCH
18	85-192	PHONO SWITCH
A		1ST I.F. TRANS. PRI.
B		1ST I.F. " SEC.
C		2ND I.F. " PRI.
D		2ND I.F. " SEC.
E	22-940	WAVE TRAP
F		BROADCAST OSC. (SEE NOTE)
G		BROADCAST ANT.
J		B'CAST PADDER (- - -)
K		SHORT WAVE OSC. (- - -)
L		SHORT WAVE ANT.
N	22-788	POLICE BAND OSC. (- - -)
		NOTE - TRIMMERS F, J, K & N ARE MOUNTED ON STRIP #22-881.

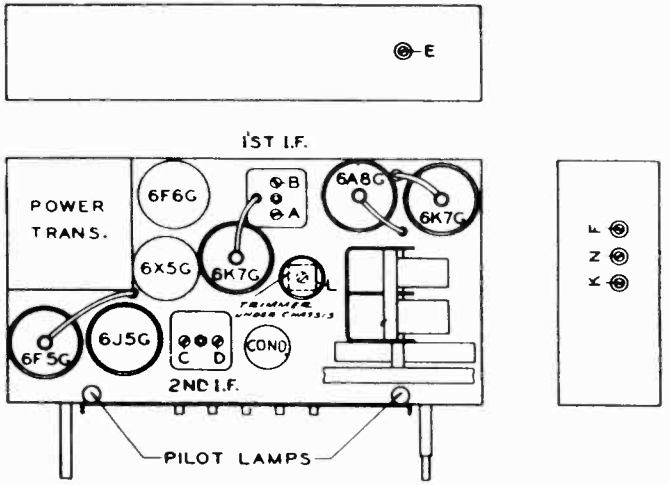
Power consumption—80 watts.

Power output—4.5 watts.

Tuning ranges— 545 Kc.— 1570 Kc.
1520 Kc.— 5000 Kc.
5600 Kc.—18300 Kc.

FOR VOLTAGES, P.B. DATA SEE INDEX

I.F. 455 KC
I.F. ALIGNMENT CONVENTIONAL
SEE SPECIAL SECTION VOL. VIII
I.F. TRIMMERS A, B, C, D.
TRIM SW OSC (K) 18 MC
TRIM SW ANT (L) 16 MC
TRIM POLICE (N) 4500 KC
TRIM BC ANT (G) 1400 KC
TRIM BC OSC (F) 1500 KC



ZENITH RADIO CORP.

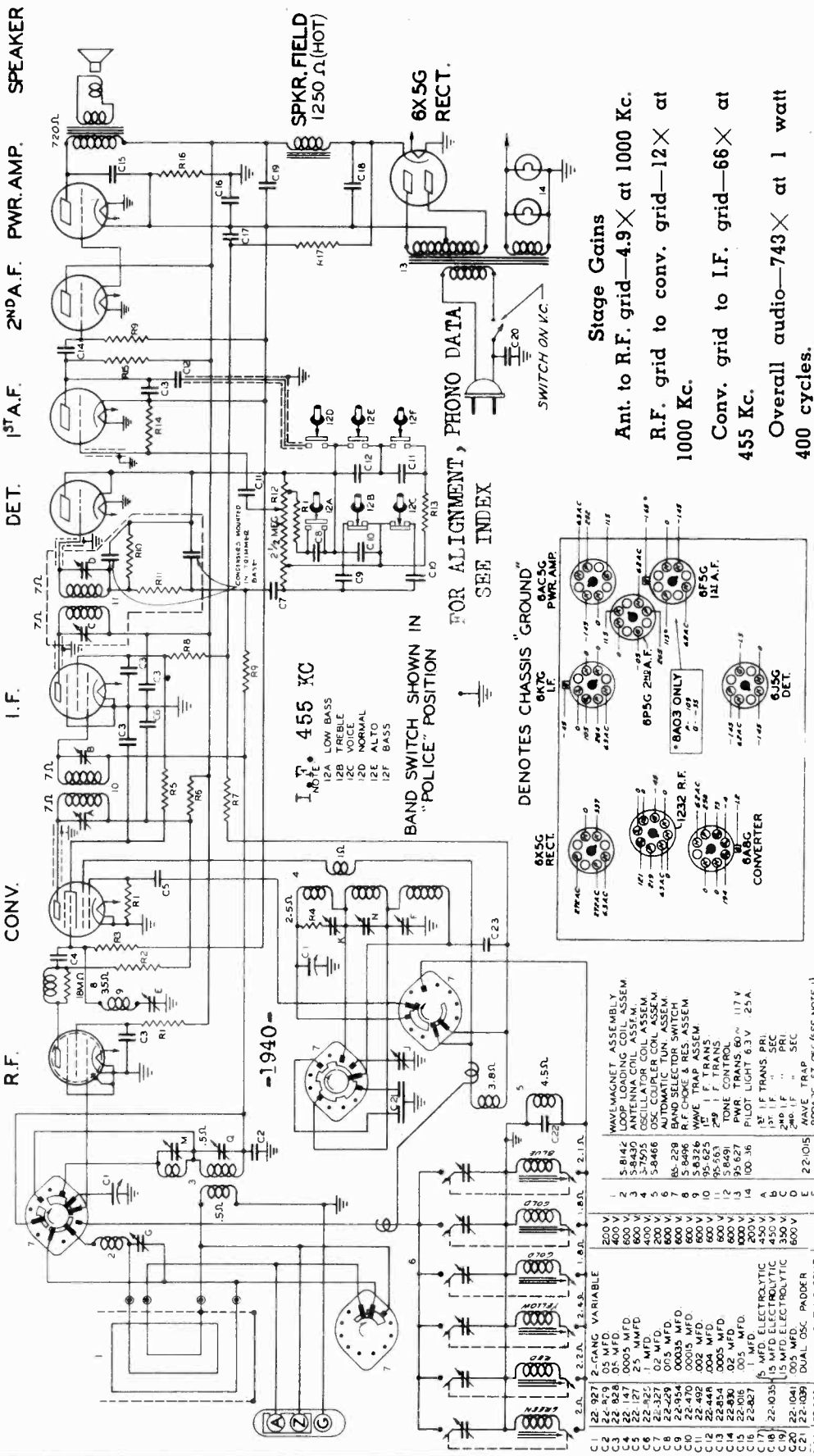
MODEL 7S585
Ch. 7A01

ZENITH PAGE 1217

MODELS 8S531, 8S548, 8S563, Ch. 8A02

ZENITH RADIO CORP.

MODELS 8S587, 8S588, Ch. 8A03



Stage Gains

Ant. to R.F. grid—4.9× at 1000 Kc.

R.F. grid to conv. grid—12× at 1000 Kc.

Conv. grid to I.F. grid—66× at 455 Kc.

Overall audio—743× at 1 watt 400 cycles.

Chassis 8A03 has phono connections added (see page 31).

Tuning ranges— 540 Kc.— 1600 Kc.
1500 Kc.— 5200 Kc.
5700 Kc.—18300 Kc.

Power consumption—8A02—65 watts. —8A03—85 watts.

All voltages measured with a 20,000 ohm per volt meter from chassis to socket contact indicated.

All voltages are positive D.C. unless marked otherwise.

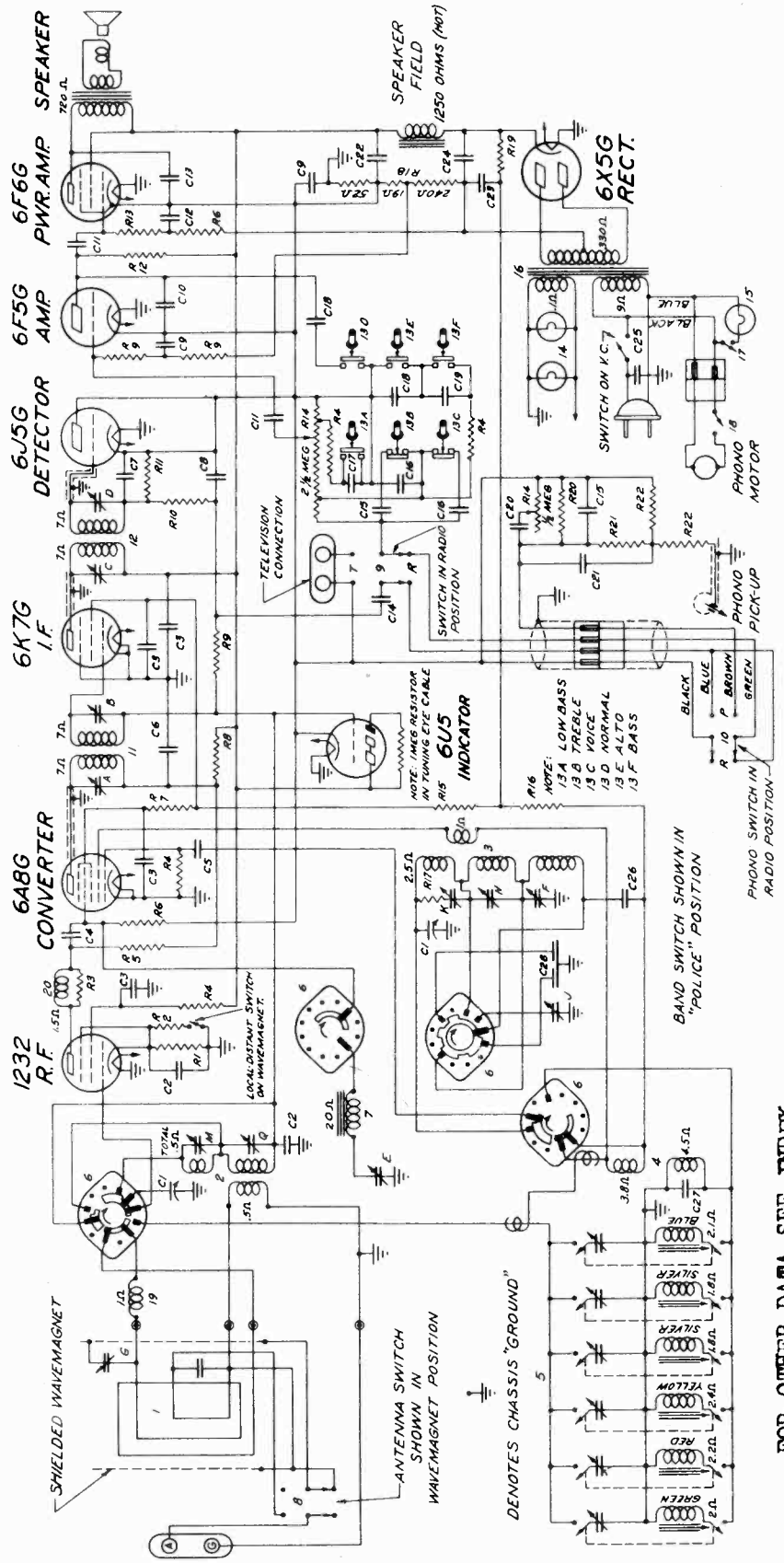
Volume control full on.

Line voltage 117 v.

MODEL	SPEAKER
8S531	49-377 8"
8S548	49-377 8"
8S563	49-367 10"

ZENITH RADIO CORP.

MODEL 8S586
Ch. 8A01



FOR OTHER DATA SEE INDEX

DIAG. NO.	PART NO.	DESCRIPTION
C1	22-927	TWO-GANG VARIABLE
C2	22-829	.05 MFD.
C3	22-828	.1 MFD.
C4	22-187	.25 MMFD.
C5	22-825	1 MFD.
C6	22-182	.00025 MFD.
C7	22-162	.0001 MFD.
C8	22-827	1 MFD.
C9	22-854	.0005 MFD.
C10	22-830	.02 MFD.
C11	22-819	.03 MFD.
C12	22-826	.005 MFD.
C13	22-187	.02 MFD.
C14	22-827	.00015 MFD.
C15	22-828	.0025 MFD.
C16	22-829	.005 MFD.
C17	22-446	.004 MFD.
C18	22-492	.002 MFD.
C19	22-326	.003 MFD.
C20	22-959	.0002 MFD.
C21	22-719	.8 MFD. ELECTROLYTIC
C22	22-931	6 MFD.
C23		-
C24		-

DIAG. NO.	PART NO.	DESCRIPTION	100W	60W
C25	22-525	.005 MFD.		
C26	22-868	COMPENSATING COND.		
C27	22-930	DUAL OSC. PADDER		
R1	63-589	10 M OHM	½ W	
R2	63-574	33 OHM	½ W	
R3	63-577	68 OHM	1 W	
R4	63-593	47 M OHM	½ W	
R5	63-587	4700 OHM	½ W	
R6	63-595	100 M OHM	½ W	
R7	63-645	68 M OHM	½ W	
R8	63-571	1 MEGOHM	½ W	
R9	63-571	22 M OHM	½ W	
R10	63-571	220 M OHM	½ W	
R11	63-717	220 M OHM	½ W	
R12	63-296	220 M OHM	½ W	
R13	63-597	470 M OHM	½ W	
R14	63-1117	VOLUME CONTROL	1 W	
R15	63-617	33 M OHM	½ W	
R16	63-796	10 M OHM	½ W	
R17	63-576	68 OHM	½ W	

DIAG. NO.	PART NO.	DESCRIPTION	100W	60W
R18	63-982	3-SECTION CANDOHM	1 W	
R19	63-964	1 M OHM	½ W	
R20	63-964	1 M OHM	½ W	
R21	63-719	470 M OHM	½ W	
R22	63-717	220 M OHM	½ W	
	57504	WAVEMAGNET ASSEMBLY		
1	57504	ANTENNA COIL ASSEMBLY		
2	57505	OSCILLATOR COIL ASSEM.		
3	57507	OSC. COUPLER COIL ASSEM.		
4	57649	AUTOMATIC TUNING ASSEM.		
5	57222	BAND SELECTOR SWITCH		
6	85-219	WAVEMAGNET SWITCH		
7	85-171	TELEVISION SWITCH		
8	85-192	PHONO SWITCH		
9	95-685	1ST I.F. TRANS.		
10	95-683	2ND I.F. TRANS.		
11	57642	TONE CONTROL SW. ASSEM.		
12	100-36	PILOT LIGHT 6.3V .25A		
13	100-80	PHONOLIGHT 110V 7W		
14	95-627	POWER TRANS 50-60~ 117V		

DIAG. NO.	PART NO.	DESCRIPTION
A		
B		
C		
D		
E	22-938	
F		
G	22-963	
H		
J		
K		
M		
N		
Q		
17	85-203	DOOR SWITCH
18	SB-42	LOOP LOADING COIL ASSEM.
19	57526	R.F. CHOKE
		1ST I.F. TRANS PRI.
		1ST I.F. " SEC.
		2ND I.F. " PRI.
		2ND I.F. " SEC.
		WAVE TRAP
		BROADCAST OSC. (SEE NOTE 1)
		BROADCAST PADDER
		BROADCAST ANTENNA
		SHORT WAVE OSC. (SEE NOTE 1)
		SHORT WAVE ANT. (SEE NOTE 2)
		POLICE BAND OSC. (SEE NOTE 1)
		POLICE BAND ANT. (SEE NOTE 2)

NOTES –
(1) TRIMMERS FIX'N ARE MOUNTED ON STRIP #22-850
(2) TRIMMERS MFG ARE MOUNTED ON STRIP #22-342

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MODEL 8S586
SPEAKER 49-366 12"

I.F. FREQUENCY 455 KC.
8 TUBE SUPERHETERODYNE
CHASSIS Nº 8A01 3BAND PHONO

MODEL 7S585, Ch. 7A01
MODEL 8S586, Ch. 8A01

ZENITH RADIO CORP.

Model 8S586

Chassis 8A01

All voltages measured with a 1000 ohm per volt meter from chassis to socket contact indicated.

All voltages are positive D.C. unless marked otherwise.

Sensitivity switch in distance position.

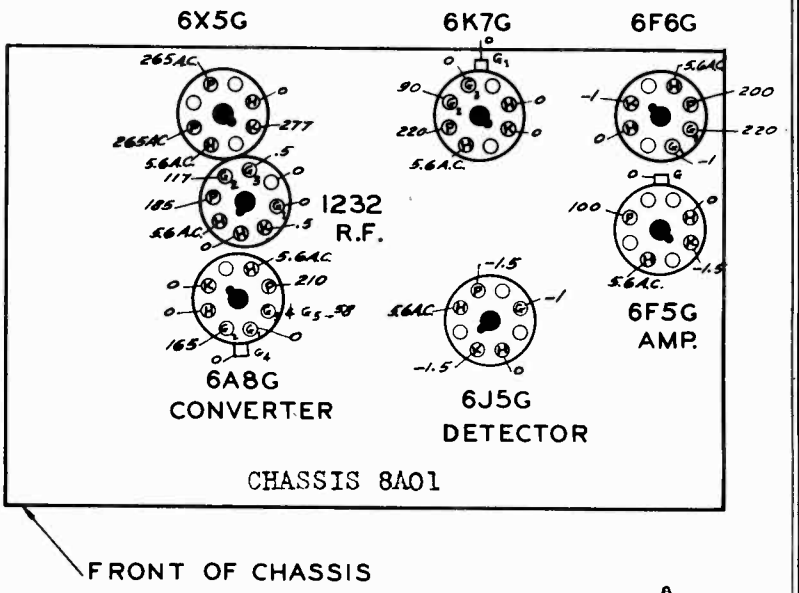
Volume control full on.

Line voltage 112 A.C.

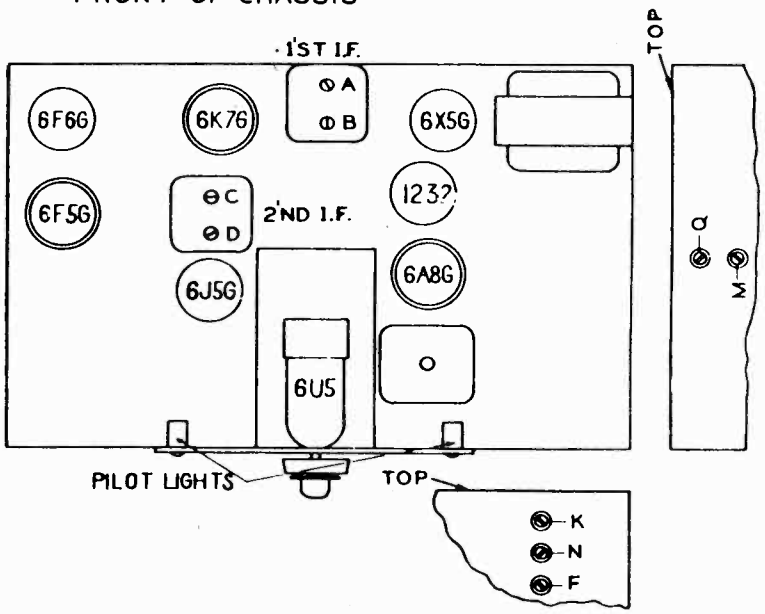
Power consumption—85 watts.

Power output—6 watts.

Tuning ranges— 540 Kc.— 1600 Kc.
1505 Kc.— 5200 Kc.
5600 Kc.—18500 Kc.



ALIGNMENT-CHASSIS 8A01
I.F. 455 KC-PEAK A,B,C,D
SW- TRIM K 18 MC
TRIM M 16 MC
POLICE-
TRIM N,Q 4.5 MC
BROADCAST
TRIM F 1400 KC
TRIM G (on loop)
AT 1400 KC WITH
WAVEMAGNET SWITCH
FOR LOOP OPERATION



MODEL 7S585

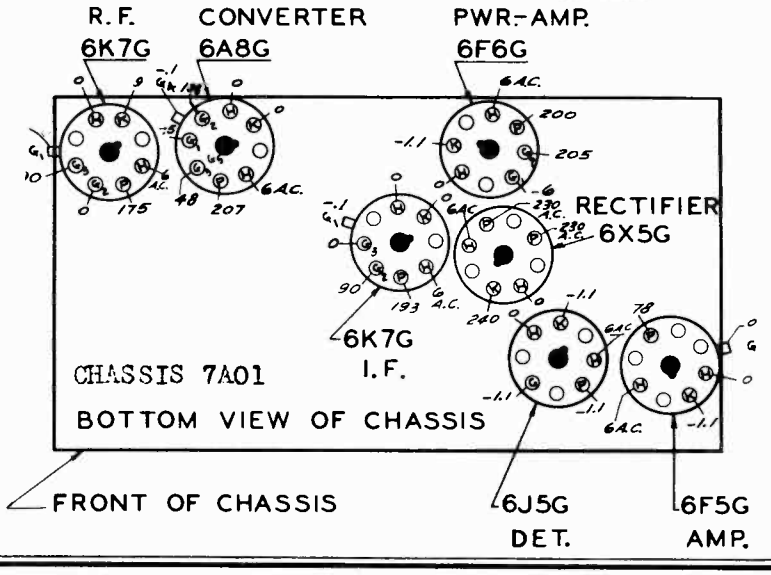
SOCKET LAYOUT
VOLTAGE DATA
CHASSIS 7A01

All voltages measured with a 1000 ohm per volt meter from chassis to socket contact indicated.

All voltages are positive D.C. unless marked otherwise.

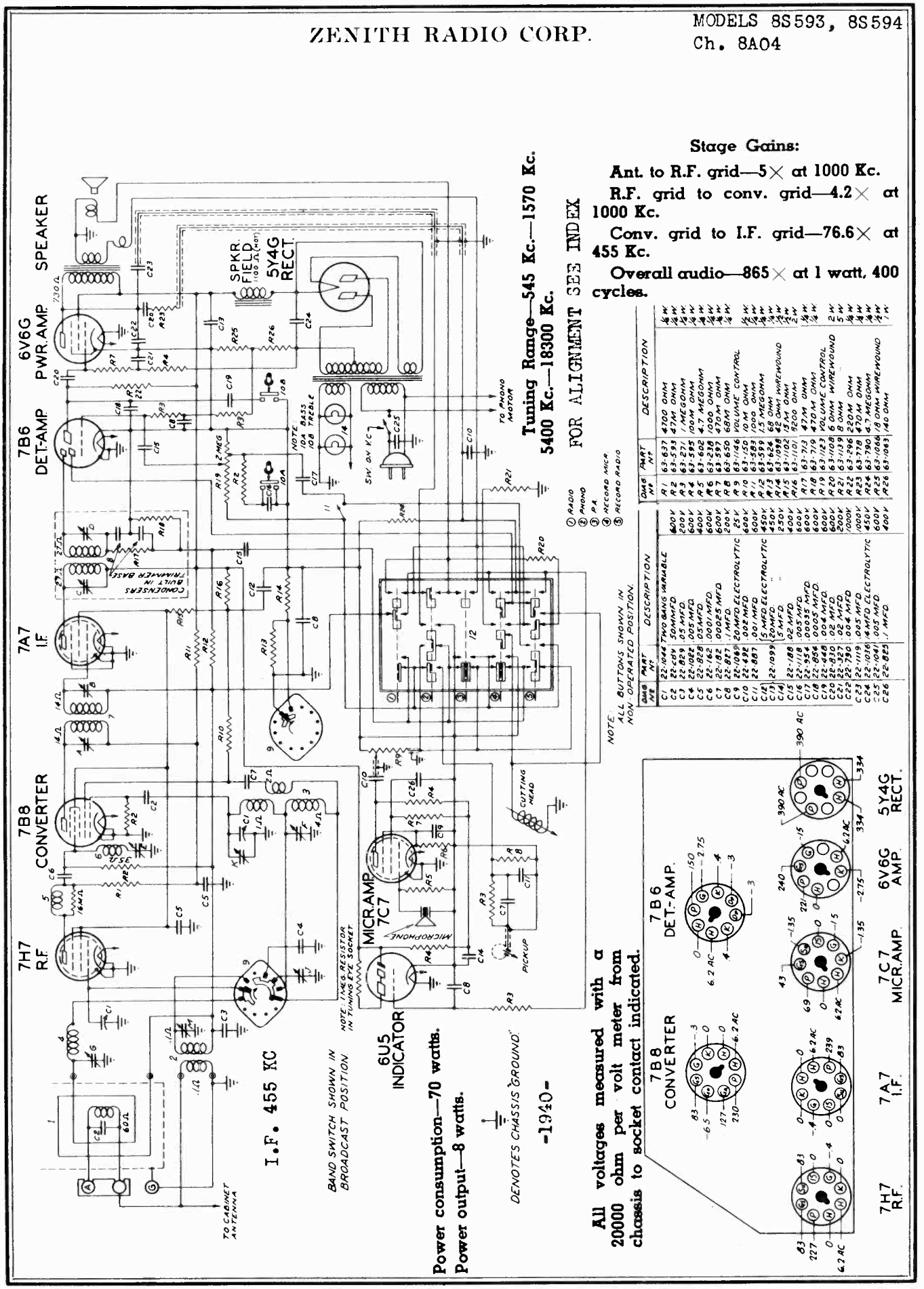
Volume control full on.

Line voltage 112 A.C.



ZENITH RADIO CORP.

MODELS 8S593, 8S594
Ch. 8A04



Tuning Range—545 Kc.—1570 Kc.
5400 Kc.—18300 Kc.

Power consumption—70 watts.
Power output—8 watts.

All voltages measured with a 20000 ohm per volt meter from chassis to socket contact indicated.

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Stage Gains:

Ant. to R.F. grid—5× at 1000 Kc.

R.F. grid to conv. grid—4.2× at 1000 Kc.

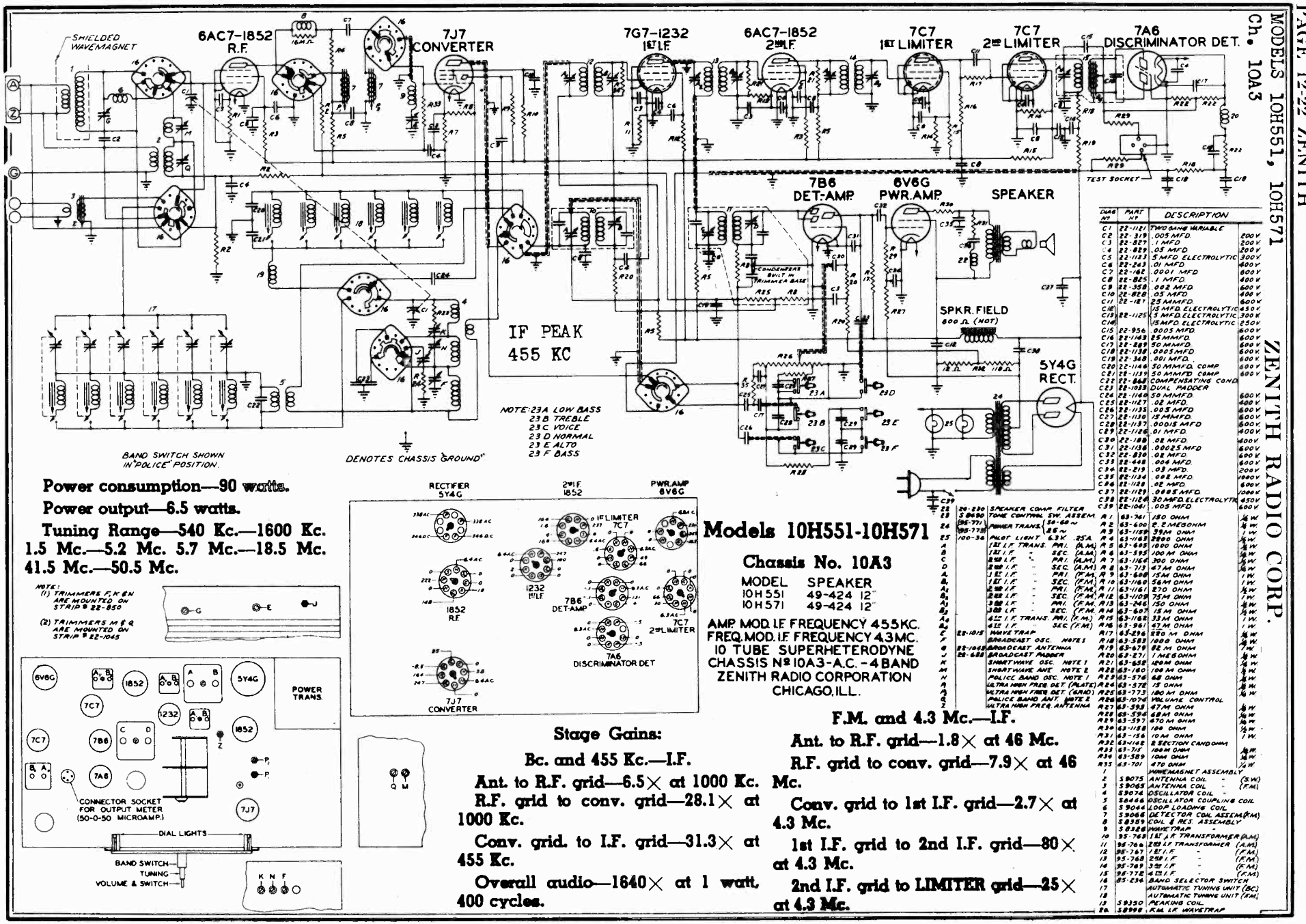
Conv. grid to I.F. grid—76.6× at 455 Kc.

Overall audio—865× at 1 watt, 400 cycles.

FOR ALIGNMENT SEE INDEX

DIAG. NO.	PART NO.	DESCRIPTION		
C1	22-1044	TWO GANG VARIABLE		
C2	22-829	30MMFD.	600V	
C3	22-829	.05 MFD.	200V	
C4	22-1022	.005 MFD.	600V	
C5	22-828	.05 MFD.	600V	
C6	22-862	.0001 MFD.	600V	
C7	22-862	.00025 MFD.	600V	
C8	22-861	.1 MFD.	25V	
C9	22-1018	2 MFD ELECTROLYTIC	450V	
C10	22-1021	.002 MFD.	600V	
C11	22-867	.001 MFD.	600V	
C(12)		.5 MFD ELECTROLYTIC	450V	
C(13)	22-1099	20MFD.	450V	
C(14)		5 MFD.	250V	
C15	22-1118	.02 MFD.	400V	
C16	22-1118	.005 MFD.	600V	
C17	22-934	.00035 MFD.	600V	
C18	22-856	.0005 MFD.	600V	
C19	22-948	.004 MFD.	600V	
C20	22-830	.02 MFD.	600V	
C21	22-830	.02 MFD.	600V	
C22	22-790	.004 MFD.	1000V	
C23	22-1119	.005 MFD.	1000V	
C24	22-1016	4 MFD ELECTROLYTIC	450V	
C25	22-1041	.005 MFD.	600V	
C26	22-825	.1 MFD.	400V	

DIAG. NO.	PART NO.	DESCRIPTION	
R1	63-637	4700 OHM	½W
R2	63-593	47M OHM	½W
R3	63-271	1 MEGOHM	½W
R4	63-595	100M OHM	½W
R5	63-602	4.7 MEGOHM	½W
R6	63-238	1000 OHM	½W
R7	63-550	470M OHM	½W
R8	63-570	470M OHM	½W
R9	63-1076	VOLUME CONTROL	
R10	63-556	10 M OHM	½W
R11	63-583	1000 OHM	½W
R12	63-599	1.5 MEGOHM	½W
R13	63-624	68 OHM	½W
R14	63-1098	42 OHM WIREWOUND	1W
R15	63-1102	15M OHM	2W
R16	63-1101	9200 OHM	1W
R17	63-713	47M OHM	½W
R18	63-719	470M OHM	½W
R19	63-1123	VOLUME CONTROL	
R20	63-1139	8 OHM WIREWOUND	5W
R21	63-296	220M OHM	½W
R23	63-778	470M OHM	½W
R24	63-790	4.7 MEGOHM	½W
R25	63-1066	18 OHM WIREWOUND	2W
R26	63-1063	40 OHM	1W



Power consumption—90 watts.

Power output—6.5 watts.

Tuning Range—540 Kc.—1600 Kc. 1.5 Mc.—5.2 Mc. 5.7 Mc.—18.5 Mc. 41.5 Mc.—50.5 Mc.

Models 10H551-10H571

Chassis No. 10A3

MODEL	SPEAKER
10H551	49-424 12"
10H571	49-424 12"

AMP. MOD. I.F. FREQUENCY 455 KC.
FREQ. MOD. I.F. FREQUENCY 4.3 MC.
10 TUBE SUPERHETERODYNE
CHASSIS Nº 10A3-A.C.-4 BAND
ZENITH RADIO CORPORATION
CHICAGO, ILL.

Stage Gains:

Bc. and 455 Kc.—I.F.

Ant. to R.F. grid—6.5× at 1000 Kc.

R.F. grid to conv. grid—28.1× at 1000 Kc.

Conv. grid. to I.F. grid—31.3× at 455 Kc.

Overall audio—1640× at 1 watt, 400 cycles.

F.M. and 4.3 Mc.—I.F.

Ant. to R.F. grid—1.8× at 46 Mc.

R.F. grid to conv. grid—7.9× at 46 Mc.

Conv. grid to 1st I.F. grid—2.7× at 4.3 Mc.

1st I.F. grid to 2nd I.F. grid—80× at 4.3 Mc.

2nd I.F. grid to LIMITER grid—25× at 4.3 Mc.

DIAG. Nº	PART Nº	DESCRIPTION	
C1	22-1121	TWO GANG VARIABLE	
C2	22-319	.005 MFD	200 V
C3	22-227	.1 MFD	200 V
C4	22-829	.05 MFD	200 V
C5	22-1123	5 MFD ELECTROLYTIC	300 V
C6	22-263	.01 MFD	400 V
C7	22-262	.0001 MFD	600 V
C8	22-825	.1 MFD	200 V
C9	22-358	.002 MFD	600 V
C10	22-828	.05 MFD	400 V
C11	22-187	25 MMFD	600 V
C12		(5 MFD ELECTROLYTIC	450 V
C13	22-1125	5 MFD ELECTROLYTIC	300 V
C14		(8 MFD ELECTROLYTIC	250 V
C15	22-956	.0005 MFD	600 V
C16	22-1163	25 MMFD	600 V
C17	22-289	50 MMFD	600 V
C18	22-1138	.0005 MFD	600 V
C19	22-368	.001 MFD	600 V
C20	22-1148	30 MMFD COMP	600 V
C21	22-1139	50 MMFD COMP	600 V
C22	23-868	COMPENSATING COND.	
C23	22-1033	DUAL PADDER	
C24	22-1148	30 MFD	600 V
C25	22-1127	.02 MFD	600 V
C26	22-1135	.005 MFD	600 V
C27	22-1130	15 MMFD	600 V
C28	22-1137	.0001 MFD	600 V
C29	22-1126	.01 MFD	400 V
C30	22-188	.02 MFD	400 V
C31	22-1136	.00025 MFD	600 V
C32	22-836	.02 MFD	600 V
C33	22-648	.004 MFD	600 V
C34	22-219	.03 MFD	200 V
C35	22-1134	.002 MFD	1000 V
C36	22-1128	.02 MFD	600 V
C37	22-1129	.048 MFD	200 V
C38	22-1124	30 MFD ELECTROLYTIC	450 V
C39	22-1061	.005 MFD	600 V
20-830		SPEAKER COMP. FILTER	
L3	S 8090	TONE CONTROL SW. ASSEM.	
(95-771		POWER TRANS. (50-60 ~	
95-778		25 ~	
100-38		PILOT LIGHT 6.3 V. .25 A.	
		1ST I.F. TRANS. PRI. (A.M.)	
		1ST I.F. " SEC. (A.M.)	
		2ND I.F. " PRI. (A.M.)	
		2ND I.F. " SEC. (A.M.)	
		1ST I.F. " PRI. (F.M.)	
		1ST I.F. " SEC. (F.M.)	
		2ND I.F. " PRI. (F.M.)	
		2ND I.F. " SEC. (F.M.)	
		3RD I.F. " PRI. (F.M.)	
		3RD I.F. " SEC. (F.M.)	
		4TH I.F. TRANS. PRI. (F.M.)	
		4TH I.F. " SEC. (F.M.)	
22-1015		WAVE TRAP	
		BROADCAST OSC. NOTE 1	
22-1068		BROADCAST ANTENNA	
22-628		BROADCAST PADDER	
		SHORTWAVE OSC. NOTE 1	
		SHORTWAVE ANT. NOTE 2	
		POLICE BAND OSC. NOTE 1	
		ULTRA HIGH FREQ. DET. (PLATE)	
		ULTRA HIGH FREQ. DET. (GRID)	
		POLICE BAND ANT. NOTE 2	
		ULTRA HIGH FREQ. ANTENNA	
A1	63-761	150 OHM	½ W
A2	63-600	2.2 MEGOHM	½ W
A3	63-1158	39M OHM	1 W
A4	63-1163	2200 OHM	½ W
A5	63-605	1000 OHM	½ W
A6	63-595	100 M OHM	½ W
A7	63-1164	300 OHM	½ W
A8	63-713	47 M OHM	½ W
A9	63-608	15M OHM	1 W
A10	63-1160	56M OHM	1 W
A11	63-1161	270 OHM	½ W
A12	63-1109	750 OHM	1 W
A13	63-246	150 OHM	½ W
A14	63-607	15 M OHM	½ W
A15	63-1168	33M OHM	1 W
A16	63-961	47M OHM	1 W
A17	63-296	220 M OHM	½ W
A18	63-583	1000 OHM	½ W
A19	63-679	82 M OHM	½ W
A20	63-871	1 MEGOHM	½ W
A21	63-658	470 M OHM	½ W
A22	63-760	100 M OHM	½ W
A23	63-576	68 OHM	½ W
A24	63-578	15 OHM	½ W
A25	63-773	180 M OHM	½ W
A26	63-1074	VOLUME CONTROL	
A27	63-593	47M OHM	½ W
A28	63-594	68M OHM	½ W
A29	63-597	470 M OHM	½ W
A30	63-1158	100 OHM	½ W
A31	63-756	10M OHM	1 W
A32	63-1162	2 SECTION CANOHM	
A33	63-715	10M OHM	½ W
A34	63-589	10M OHM	½ W
A35	63-701	470 OHM	½ W
1		ANTENNA COIL ASSEMBLY	
2	S 8075	ANTENNA COIL -	(S.W.)
3	S 9065	ANTENNA COIL -	(F.M.)
4	S 9074	OSCILLATOR COIL -	
5	S 8446	OSCILLATOR COUPLING COIL	
6	S 9044	LOOP LOADING COIL	
7	S 9066	DETECTOR COIL ASSEM.	(F.M.)
8	S 8359	COIL & RES. ASSEMBLY	
9	S 8328	WAVE TRAP -	
10	95-768	1ST I.F. TRANSFORMER	(A.M.)
11	95-766	2ND I.F. TRANSFORMER	(A.M.)
12	95-767	1ST I.F. -	(F.M.)
13	95-768	2ND I.F. -	(F.M.)
14	95-769	3RD I.F. -	(F.M.)
15	95-772	4TH I.F. -	(F.M.)
16	85-234	BAND SELECTOR SWITCH	
17		AUTOMATIC TUNING UNIT	(BC.)
18		AUTOMATIC TUNING UNIT	(F.M.)
19	S 9350	PEAKING COIL	
20	S 8998	F.M. I.F. WAVETRAP	

ZENITH RADIO CORP.

MODELS 10S531, 10S549, 10S566, Ch. 10A1
MODELS 10S589, 10S590, Ch. 10A2

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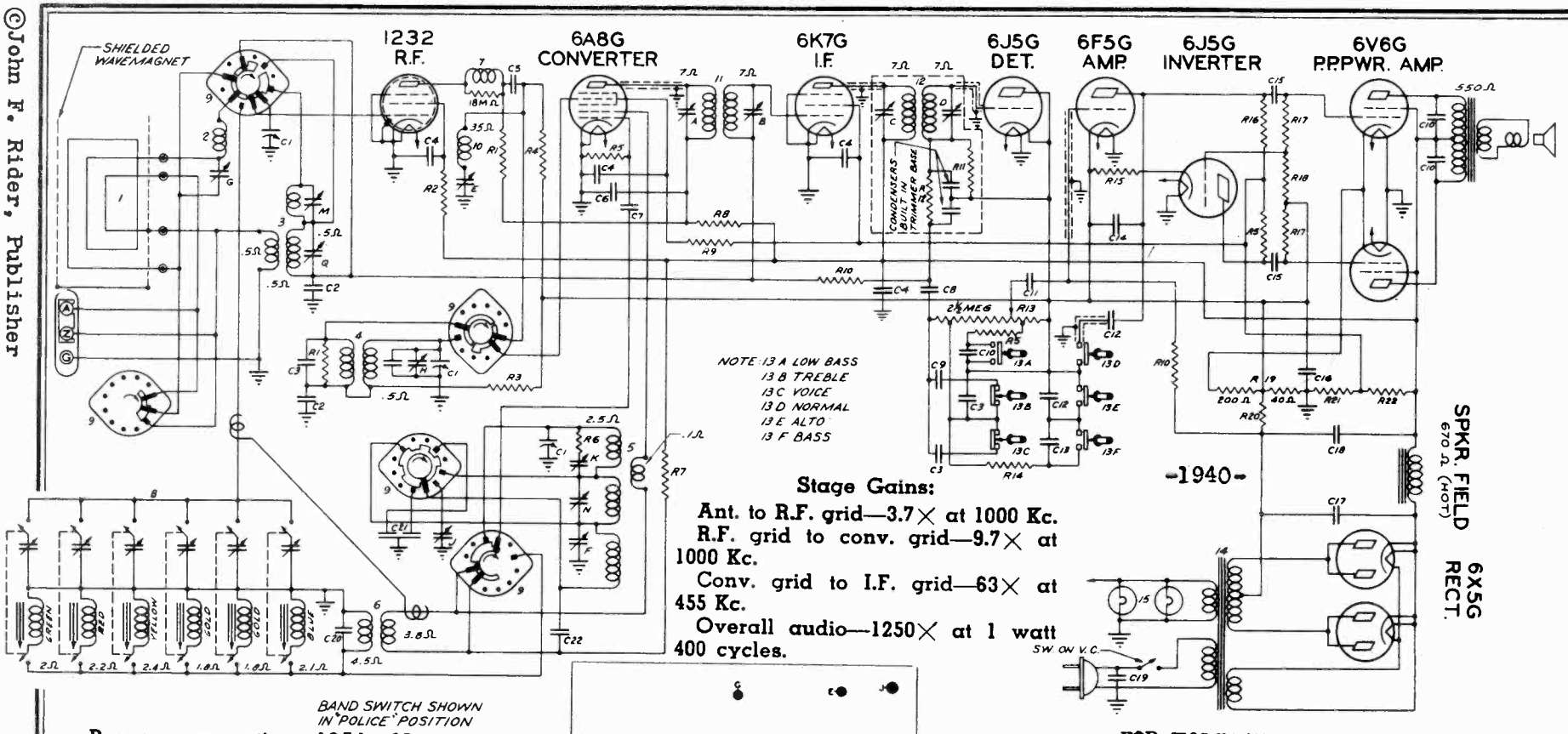


Stage Gains:

Ant. to R.F. grid—3.7× at 1000 Kc.

R.F. grid to conv. grid—9.7× at 1000 Kc.

Conv. grid to I.F. grid—63× at 455 Kc.

Overall audio—1250× at 1 watt 400 cycles.

Power consumption—10A1—95 watts.

Power consumption—10A2—120 watts.

DIAG. NO	PART NO	DESCRIPTION		DIAG NO	PART NO	DESCRIPTION	
C 1	22-1043	THREE GANG VARIABLE		R 1	63-587	4700 OHM	½ W
C 2	22-829	.05 MFD.	200V.	R 2	63-595	100 M OHM	½ W
C 3	22-470	.00015 MFD.	600 V.	R 3	63-589	10 M OHM	½ W
C 4	22-828	.05 MFD.	400 V.	R 4	63-590	15 M OHM	½ W.
C 5	22-147	.0005 MFD.	600 V.	R 5	63-593	47 M OHM	½ W.
C 6	22-825	.1 MFD.	400 V.	R 6	63-576	68 OHM	½ W.
C 7	22-127	25 MMFD.	600 V.	R 7	63-151	15 M OHM	1 W.
C 8	22-327	.02 MFD.	200 V.	R 8	63-605	1000 OHM	½ W.
C 9	22-954	.00035 MFD.	600 V.	R 9	63-643	18 M OHM	½ W
C 10	22-229	.005 MFD.	600 V.	R 10	63-271	1 MEGOHM	½ W.
C 11	22-830	.02 MFD.	600 V.	R 11	03-717	220 M OHM	½ W
C 12	22-448	.004 MFD.	600 V.	R 12	63-711	22 M OHM	½ W
C 13	22-492	.002 MFD.	600 V.	R 13	63-1074	VOLUME CONTROL	
C 14	22-854	.0005 MFD.	600 V.	R 14	63-594	68 M OHM	½ W.
C 15	22-171	.05 MFD.	600 V.	R 15	63-585	2200 OHM	½ W.
C 16	22-827	.1 MFD.	200 V.	R 16	63-296	220 M OHM	½ W.
C 17	22-934	20 MFD. ELECTROLYTIC	450 V.	R 17	63-657	330 M OHM	½ W.
C 18		20 MFD. ELECTROLYTIC	350 V.	R 18	63-648	47 M OHM	½ W
C 19	22-1041	.005 MFD.	600 V.	R 19	63-1048	TWO SECTION CANDOHM	
C 20	22-868	COMPENSATING COND.		R 20	63-1061	7 OHM WIREWOUND	5 W.
C 21	22-1039	DUAL OSCILLATOR PADDER		R 21	63-676	27 M OHM	1 W.
C 22	22-358	.002 MFD.	600 V.	R 22	63-1058	22 M OHM	2 W.

FOR VOLTAGES SEE INDEX

I.F. 455 KC

I.F. ALIGNMENT CONVENTIONAL SEE SPECIAL SECTION VOL VIII

I.F. TRIMMERS A,B,C,D

WAVETRAP E, ADJUST FOR MINIMUM SIGNAL RESPONSE WITH SIGNAL FED TO ANT. 455 KC

SW OSC (K) TRIM AT 18 MC

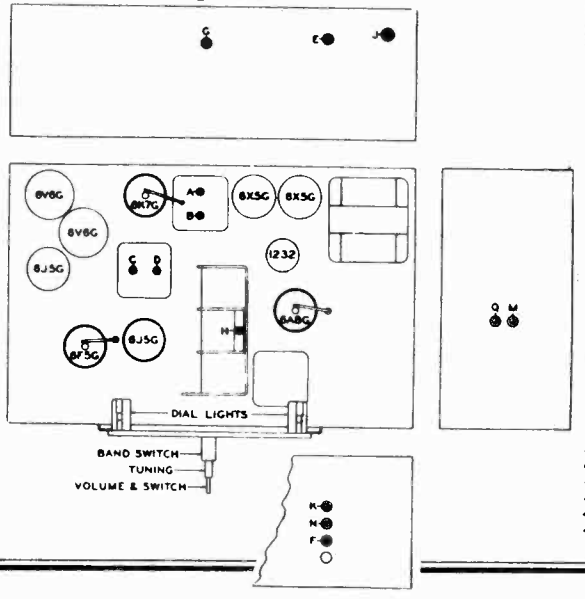
SW ANT (M) TRIM AT 16 MC

POL. (Q) TRIM AT 4.5 MC

BC OSC (F) TRIM AT 1500 KC

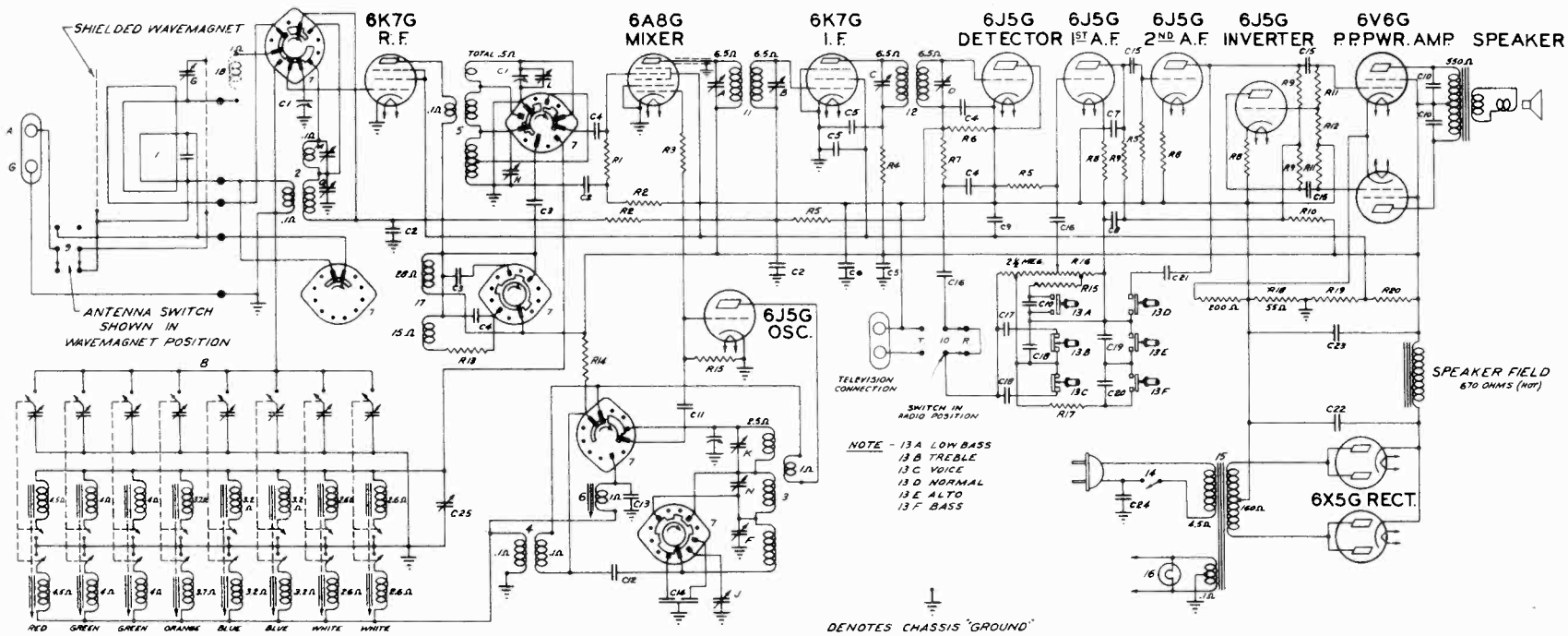
BC (G-H) TRIM AT 1400 KC

BC (J) PAD At 600 KC



MODELS 12S550, 12S568, 12S569, 12S595, Ch. 12A3

ZENITH RADIO CORP.



BAND SWITCH SHOWN IN "POLICE" POSITION

DIAG. PART NO.	PART NO.	DESCRIPTION	
C1	22-951	THREE GANG VARIABLE	
C2	22-829	.05 MFD.	200V
C3	22-289	50 MMFD.	600V
C4	22-162	.0001 MFD.	600V
C5	22-828	.05 MFD.	400V
C6	22-827	.1 MFD.	200V
C7	22-854	.0005 MFD.	600V
C8	22-991	16 MFD ELECTROLYTIC	350V
C9		16 MFD ELECTROLYTIC	200V
C10	22-229	.005 MFD.	600V
C11	22-127	25 MMFD.	600V
C12	22-338	.002 MFD.	600V
C13	22-944	COMPENSATING COND.	
C14	22-930	DUAL OSC. PADDER	
C15	22-171	.05 MFD.	600V
C16	22-327	.02 MFD.	200V
C17	22-954	.00035 MFD.	600V
C18	22-470	.00015 MFD.	600V
C19	22-448	.004 MFD.	600V
C20	22-492	.002 MFD.	600V
C21	22-196	.01 MFD.	600V
C22	22-970	20 MFD ELECTROLYTIC	450V
C23		30 MFD ELECTROLYTIC	350V
C24	22-992	.02 MFD.	600V
C25		TRIMMER COND. (SEE NOTE 1)	
R1	63-597	470 M OHM	1/2 W
R2	63-595	100 M OHM	1/2 W
R3	63-581	470 OHM	1/2 W
R4	63-605	1000 OHM	1/2 W
R5	63-271	1 MEGOHM	1/2 W
R6	63-655	220 M OHM	1/2 W
R7	63-591	22M OHM	1/2 W
R8	63-288	2200 OHM	1/2 W
R9	63-648	47 M OHM	1/2 W
R10	63-680	10 M OHM	1 W
R11	63-657	330 M OHM	1/2 W
R12	63-647	39 M OHM	1/2 W
R13	63-596	3300 OHM	1/2 W
R14	63-1065	15 M OHM	1 W
R15	63-593	47 M OHM	1/2 W
R16	63-1078	VOLUME CONTROL	
R17	63-594	68 M OHM	1/2 W
R18	63-1058	2 SECTION CANDOHM	
R19	63-676	27 M OHM	1 W
R20	63-1038	22 M OHM	2 W

DIAG. NO.	PART NO.	DESCRIPTION
1	85-209	BAND SELECTOR SWITCH
8		AUTOMATIC TUNING UNIT
9	85-171	WAVEMAGNET SWITCH
10	85-171	TELEVISION SWITCH
11	95-637	1ST I.F. TRANSFORMER
12	95-638	2ND I.F. TRANSFORMER
13	58593	TONE CONTROL SW. ASSEM.
14	85-148	A.C. SWITCH
15	95-639	POWER TRANS. 60~ 117V.
16	100-36	PILOT LIGHT 6.3V .25A
17	20-216	PLATE CHOKE COIL
18	58142	LOOP LOADING COIL ASSEM. (NOTE: USED ON SOME MODELS)
A		1ST I.F. TRANS. PRI.
B		1ST I.F. " SEC.
C		2ND I.F. " PRI.
D		2ND I.F. " SEC.
F		BROADCAST OSC. (SEE NOTE)
G		ANTENNA BROADCAST
H	22-959	DETECTOR BROADCAST
K		SHORT WAVE OSC. (SEE NOTE)
L		SHORT WAVE DET. (ON GANG)
M		SHORT WAVE ANTENNA
N		POLICE BAND OSC. (SEE NOTE)
Q		POLICE BAND ANTENNA
J	22-463	BROADCAST PADDER

NOTE:
(1) TRIMMERS K, N, AND C25 ARE MOUNTED ON STRIP #22-981
(2) TRIMMERS M & Q ARE MOUNTED ON STRIP #22-982

I.F. FREQUENCY 455 KC.
12 TUBE SUPERHETERODYNE
CHASSIS №12A3 3 BAND A.C.

Stage Gains

Ant. to R.F. grid—2.08× at 1000 Kc.

R.F. grid to conv. grid—7.5× at 1000 Kc.

Conv. grid to I.F. grid—43× at 455 Kc.

Overall audio—2127× at 1 watt 400 cycles.

NOTE

Chassis 12A4 has phono connections added

Tuning ranges— 540 Kc.— 1600 Kc.
1500 Kc.— 5200 Kc.
5700 Kc.—18300 Kc.

Power consumption—12A3—95 watts.

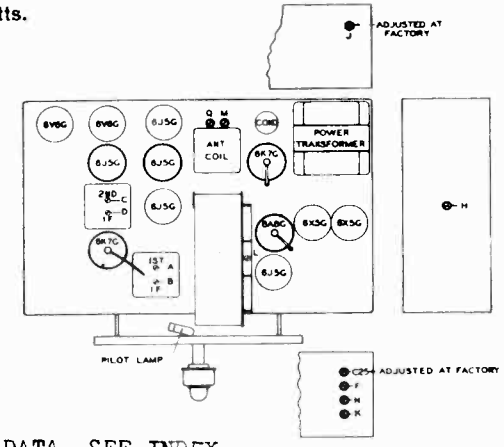
Power consumption—12A4—120 watts.

Power output—15 watts.

MODEL	SPEAKER	
12S550	49-351	10"
12S568	49-351	10"
12S569	49-404	15"

CONVENTIONAL
I.F. ALIGNMENT
SEE SPECIAL
SECTION VOL. VIII

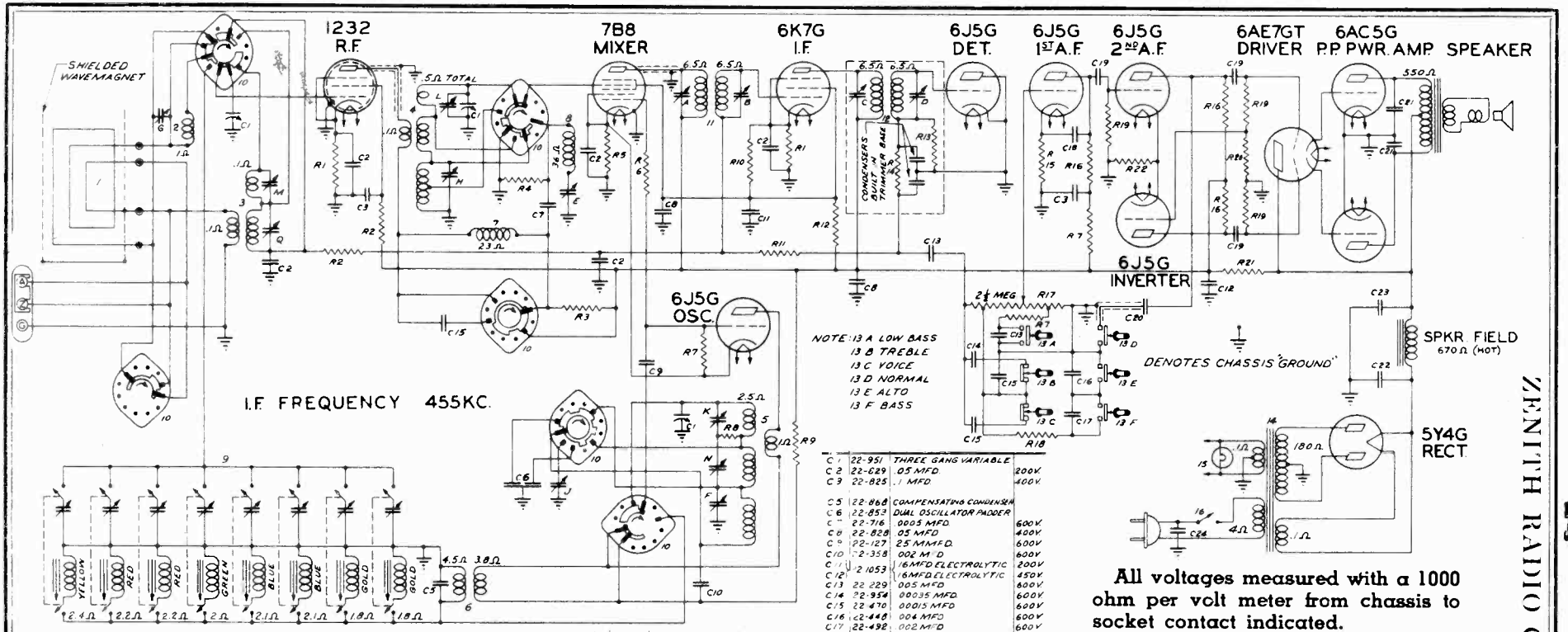
SHORT WAVE
TRIM (K) 18000KC
TRIM L-M 16000KC
POLICE
TRIM N-Q 4500KC
BROADCAST
TRIM F-H-G 1400KC
PAD J 600KC



FOR VOLTAGES, P.B. DATA, SEE INDEX

ZENITH RADIO CORP.

MODELS 12S550Z, 12S568E, 12S568Z, 12S569E, 12S569Z, 12S595Z, Ch. 12A1

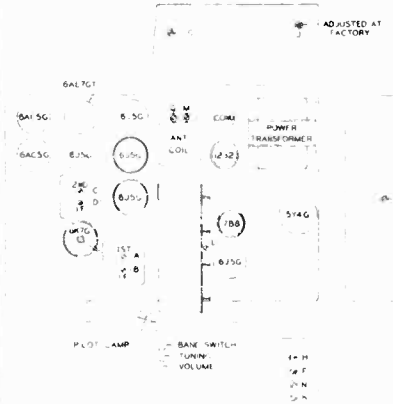


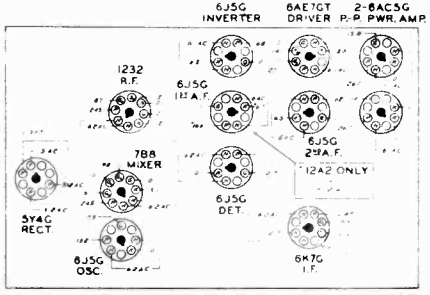
MODEL	SPEAKER	
12S550Z	49-351	10
12S568Z	49-351	10
12S569Z	49-404	15
12S568E	49-416	14

BAND SWITCH SHOWN IN "POLICE" POSITION

12 TUBE SUPERHETERODYNE
CHASSIS Nº 12A1 3 BAND A.C.
ZENITH RADIO CORPORATION
CHICAGO, ILL.

NOTE:
(1) TRIMMERS F, H, K & N ARE MOUNTED ON STRIP # 22-1052
(2) TRIMMERS M & Q ARE MOUNTED ON STRIP # 22-982





1		WAVEMAGNET ASSEMBLY	
2	58142	LOOP LOADING COIL ASSEMBLY	
3	58749	ANTENNA COIL ASSEMBLY	
4	58751	DETECTOR COIL ASSEMBLY	
5	58750	OSCILLATOR COIL ASSEMBLY	
6	58446	OSCILLATOR CPLG COIL ASSEM.	
7	59389	R.F. COIL ASSEMBLY	
8	58326	WAVE TRAP COIL ASSEMBLY	
9		AUTOMATIC TUNING UNIT	
10	85-235	BAND SELECTOR SWITCH	
11	95 637	1ST I.F. TRANSFORMER	
12	95-715	2ND I.F. TRANSFORMER	
13	58593	TONE CONTROL SW. ASSEMBLY	
14	95-714	PWR. TRANS. 60 ~ 117 V.	
15	100-36	PILOT LIGHT 6.3 V. .25 A.	
16	85-148	A.C. SWITCH	

7-31-40 1ST A.F. BYPASS CHANGED 22-1108 WAS 22-970

C1	22-951	THREE GANG VARIABLE	
C2	22-629	.05 MFD.	200V.
C3	22-825	.1 MFD.	400V.
C5	22-868	COMPENSATING CONDENSER	
C6	22-853	DUAL OSCILLATOR PADDER	
C7	22-716	.0005 MFD.	600V.
C8	22-828	.05 MFD.	400V.
C9	22-127	25 MMFD.	600V.
C10	22-358	.002 MFD.	600V.
C11	21053	16MFD ELECTROLYTIC	200V.
C12		16MFD ELECTROLYTIC	450V.
C13	22-229	.005 MFD.	600V.
C14	22-958	.00035 MFD.	600V.
C15	22-470	.00015 MFD.	600V.
C16	22-448	.004 MFD.	600V.
C17	22-492	.002 MFD.	600V.
C18	22-854	.0005 MFD.	600V.
C19	22-832	.02 MFD.	600V.
C20	22-[illegible]	.01 MFD.	600V.
C21	22-[illegible]	.005 MFD.	1000V.
C22	22-1108	20MFD ELECTROLYTIC	450V.
C23		20MFD ELECTROLYTIC	450V.
	22-[illegible]	.02 MFD.	600V.
R1	63-627	180 OHM	½ W.
R2	63-595	100M OHM	½ W.
R3	63-587	4700 OHM	½ W.
R4	63-591	22M OHM	½ W.
R5	63-580	330 OHM	½ W.
R6	63-701	470 OHM	½ W.
R7	63-593	47M OHM	½ W.
R8	63-681	39 OHM	½ W.
R9	63-1055	22 M OHM	1 W.
R10	63-676	27M OHM	1 W.
R11	63-271	1 MEGOHM	½ W.
R12	63-1058	22M OHM	2 W.
R13	63-717	220M OHM	½ W.
R14	63-711	22 M OHM	½ W.
R15	63-439	2700 OHM	½ W.
R16	63-592	33M OHM	½ W.
R17	63-1078	VOLUME CONTROL	
R18	63-594	68 M OHM	½ W.
R19	63-657	330 M OHM	½ W.
R20	63-645	27M OHM	½ W.
R21	63-1105	1000 OHM	2 W.
R22	63-584	1500 OHM	½ W.
A		1ST I.F. TRANS. PRI.	
B		1ST I.F. TRANS. SEC.	
C		2ND I.F. TRANS. PRI.	
D		2ND I.F. TRANS. SEC.	
E	22-1015	WAVE TRAP	
F		BROADCAST OSC (NOTE 1)	
G	22-1042	BROADCAST ANTENNA	
H		BROADCAST DET. (NOTE 1)	
J	22-628	BROADCAST PADDER	
K		SHORTWAVE OSC (NOTE 1)	
L		SHORTWAVE DET. (GANG)	
M		SHORTWAVE ANT (NOTE 2)	
N		POLICE OSC (NOTE 1)	
Q		POLICE ANT (NOTE 2)	

All voltages measured with a 1000 ohm per volt meter from chassis to socket contact indicated.

All voltages are positive D.C. unless marked otherwise.

Volume control on full.

Line voltage 117 v.

Power consumption—100 watts.

Power output—14 watts.

Stage Gains:

Ant. to R.F. grid—10.7× at 1000 Kc.

R.F. grid to conv. grid—6.75× at 1000 Kc.

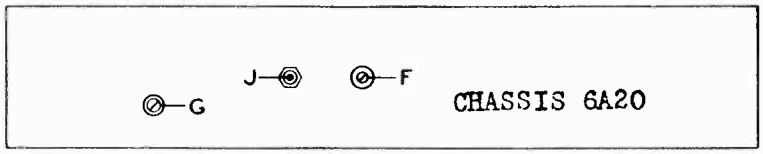
Conv. grid to I.F. grid—31-3× at 455 Kc.

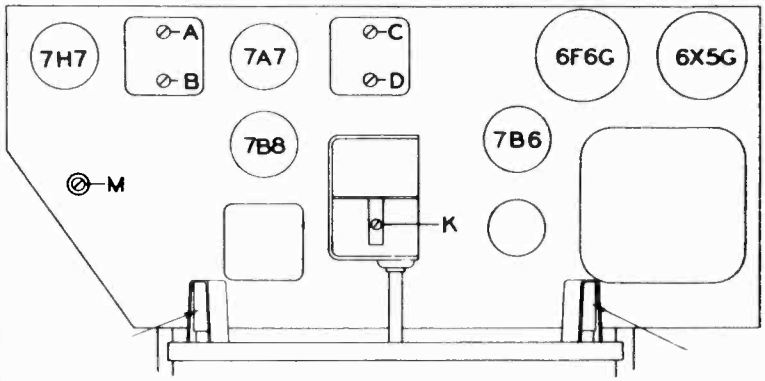
Overall audio—1640× at 1 watt, 400 cycles.

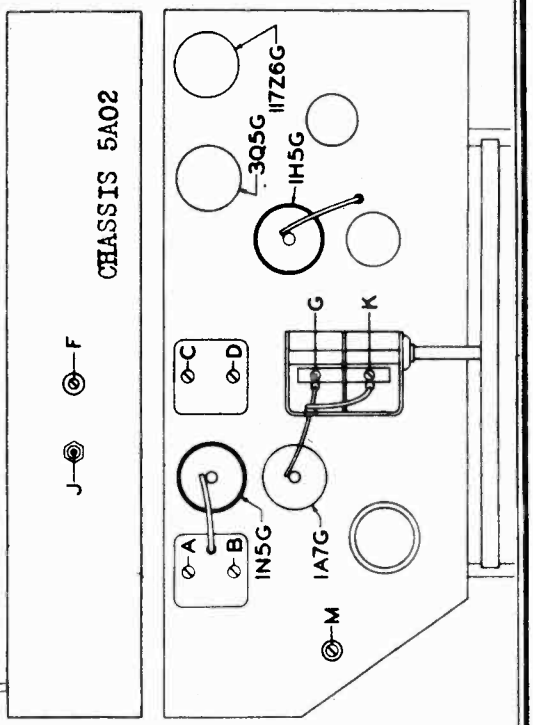
NOTE—The letter E after model number designates the use of a 14 inch speaker.

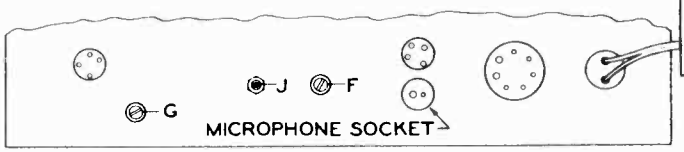
Ch. 5A02
Ch. 6A20
Ch. 8A04
Ch. 10A1, 10A2

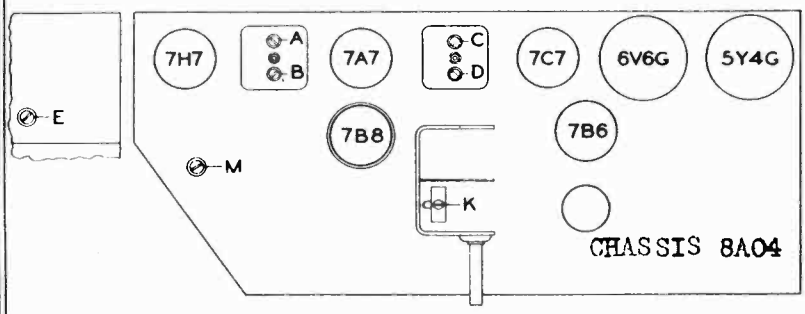
ZENITH RADIO CORP.









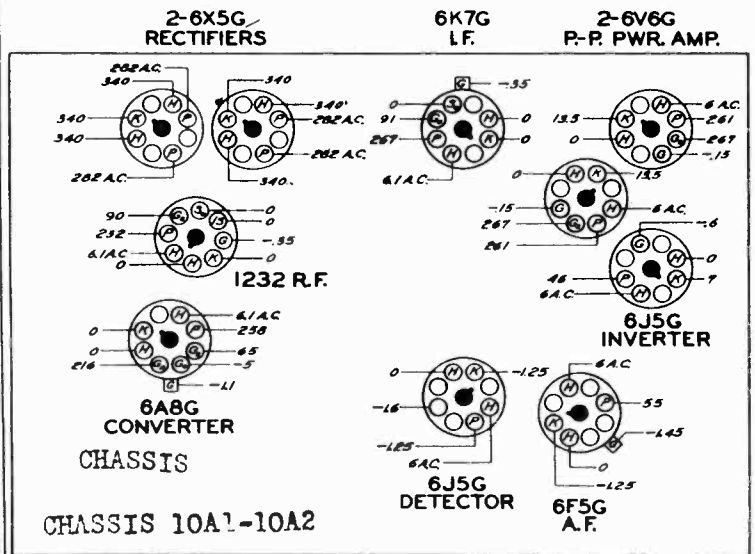


ALIGNMENT-CHASSIS 5A02
I.F. ALIGNMENT CONVENTIONAL
ADJUST TRIMMERS A B C D-455 KC
TRIM K 18 MC
TRIM F,G 1700 KC
PAD J AT 600 KC
TRIM M AT 18 MC

ALIGNMENT-CHASSIS 6A20
I.F. SAME AS CHASSIS 5A02
TRIM K AT 18 MC
TRIM M AT 16 MC
TRIM F,G AT 1500 KC
PAD J AT 600 KC
WITH 455-KC SIGNAL
FED TO RF GRID, ADJUST
WAVETRAP E FOR MINIMUM
RESPONSE.

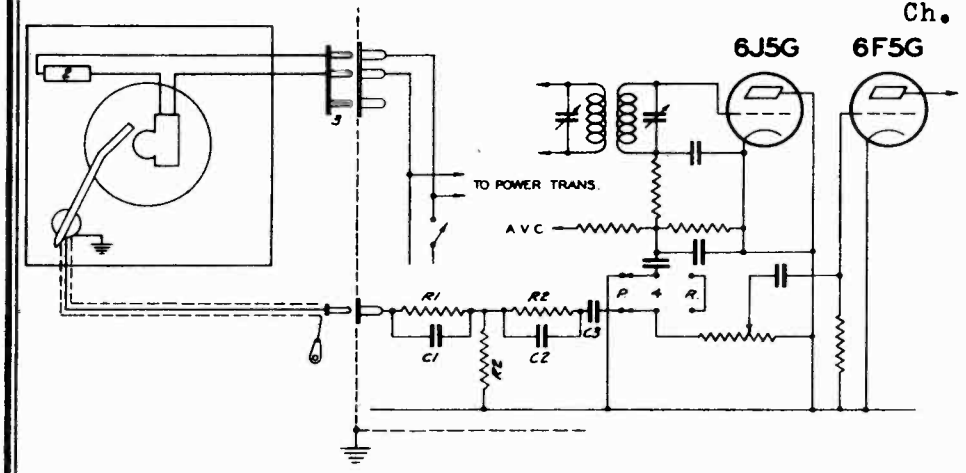
ALIGNMENT -CHASSIS 8A04
SAME AS FOR CHASSIS 6A20

VOLTAGE DATA
CHASSIS 10A1-10A2
ALL VOLTAGES MEASURED WITH
20,000 OHMS-PER-VOLT METER
FROM CHASSIS TO POINT INDIC
-ATED



ZENITH RADIO CORP.

Ch. 6A02, 6A04, 6A13, 6A14
Ch. 10A2
Ch. 12A2
Ch. 12A4

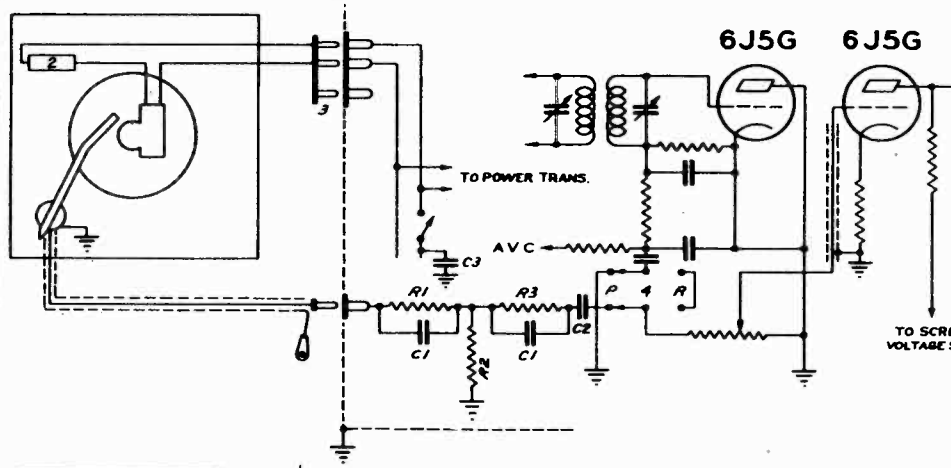


DIAG. Nº	PART Nº	DESCRIPTION	
C1	22-1048	.00085 MFD.	600 V.
C2	22-954	.00035 MFD.	600 V.
C3	22-887	.001 MFD.	600 V.
R1	63-597	470M OHM	½ W.
R2	63-271	1 MEGOHM	½ W.
1	169-42	WEBSTER AUTOMATIC RECORD PLAYER	
2	85-191	A.C. SWITCH	
3	58-85	A.C. PLUG	
4	85-228	PHONO-RADIO SW.	

PHONO CIRCUIT DATA

MODEL	SPEAKER
10S589	49-400 15"
10S590	49-402 12"

CHASSIS Nº 10A2

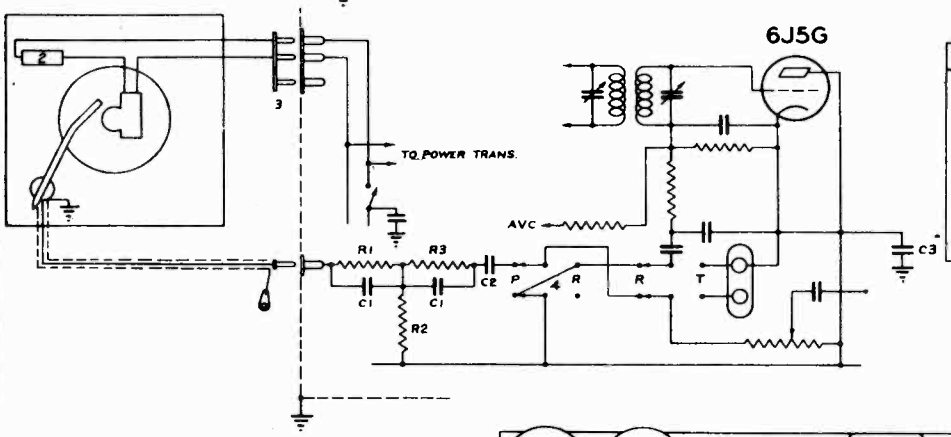


DIAG. Nº	PART Nº	DESCRIPTION	
C1	22-954	.00035 MFD.	600 V.
C2	22-887	.001 MFD.	600 V.
C3	22-1065	.0025 MFD.	600 V.
R1	63-597	470M OHM	½ W.
R2	63-657	330M OHM	½ W.
R3	63-271	1 MEGOHM	½ W.
1	169-42	WEBSTER AUTOMATIC RECORD PLAYER	
2	85-191	A.C. SWITCH	
3	58-85	A.C. PLUG	
4	85-228	PHONO-RADIO SW.	

PHONO CIRCUIT DATA

MODEL	SPEAKER
12S595Z	49-401 15"

CHASSIS Nº 12A2



DIAG. Nº	PART Nº	DESCRIPTION	
C1	22-954	.00035 MFD	600 V.
C2	22-887	.001 MFD.	600 V.
C3	22-684	8 MFD ELECTROLYTIC	150 V.
R1	63-597	470M OHM	½ W.
R2	63-596	330M OHM	½ W.
R3	63-271	1 MEGOHM	½ W.
1	169-42	WEBSTER AUTOMATIC RECORD PLAYER	
2	85-191	A.C. SWITCH	
3	58-85	A.C. PLUG	
4	85-228	PHONO RADIO SWITCH	

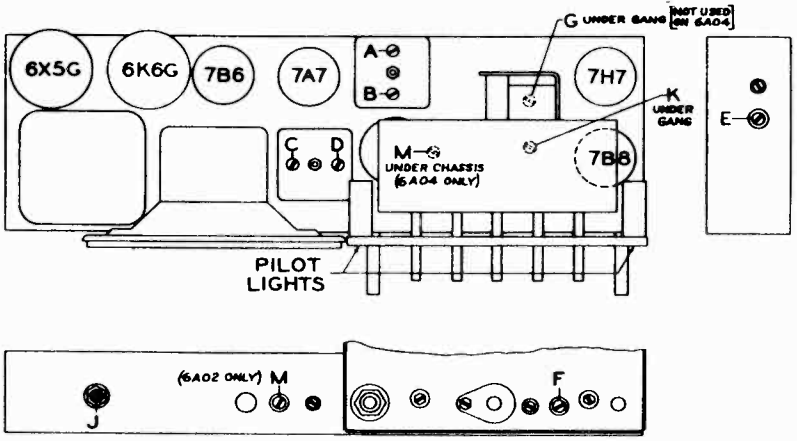
PHONO CIRCUIT DATA

MODEL	SPEAKER
12S595	49-401 15"

CHASSIS Nº 12A4

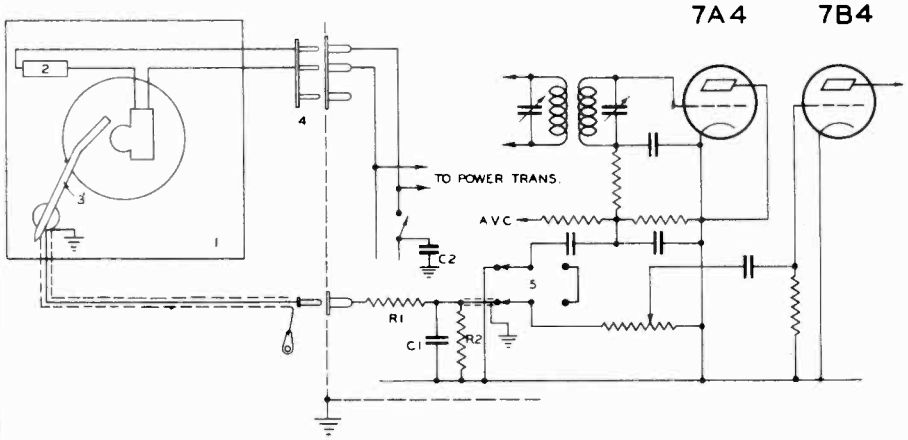
ALIGNMENT

CHASSIS 6A02, 6A04, 6A13, 6A14
I.F. TRIMMERS A B C D
PEAK AT 455 KC
WAVETRAP E-ADJUST FOR
MIN. SIGNAL RESPONSE
AT 455 KC SIGNAL AT
R-F GRID.
TRIM K 18 MC
TRIM F.G 1500 KC
PAD J 600 KC
TRIM M 16 MC



Ch. 7A04
Ch. 6A04
Ch. 8A03
Ch. 12A2

ZENITH RADIO CORP.



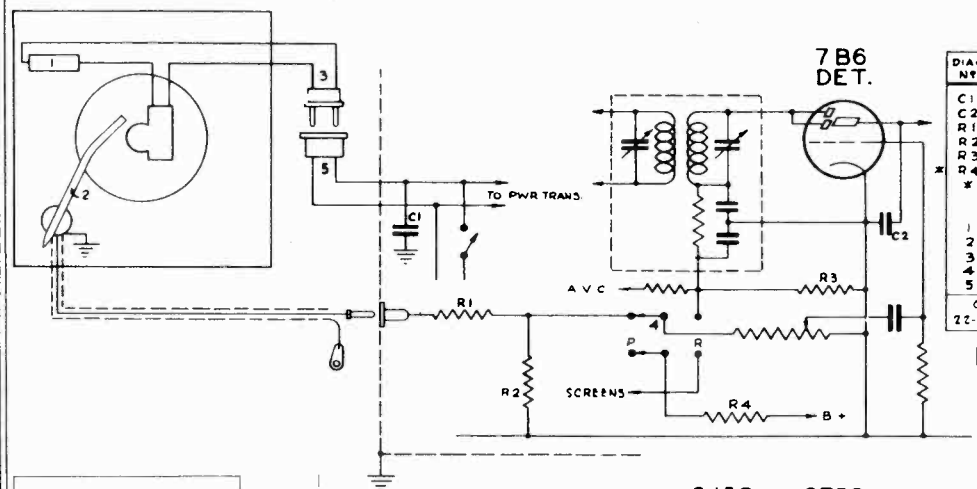
DIAG Nº	PART Nº		DESCRIPTION	
C1	22-887		.001 MFD.	600 V.
C2	22-1041		.005 MFD.	600 V
R1	63-597		470M OHM	¼ W.
R2	63-655		220M OHM	¼ W
	MODEL 7S582	MODEL 7S581		
1	169-42		WEBSTER AUTOMATIC RECORD PLAYER	
2	85-191		A.C. SWITCH	
3		142-28	PICK-UP	
4	58-85	58-85	A.C. PLUG	
5	85-171	85-171	PHONO-RADIO S.W.	

NOTE-BANDSWITCH ON THIS CHASSIS IS PART NO. 85-227.

PHONO CIRCUIT DATA

MODEL	SPEAKER
7S582	49-369 10"
7S581	49-396 10"
7S584	49-397 12"

CHASSIS NO. 7A04



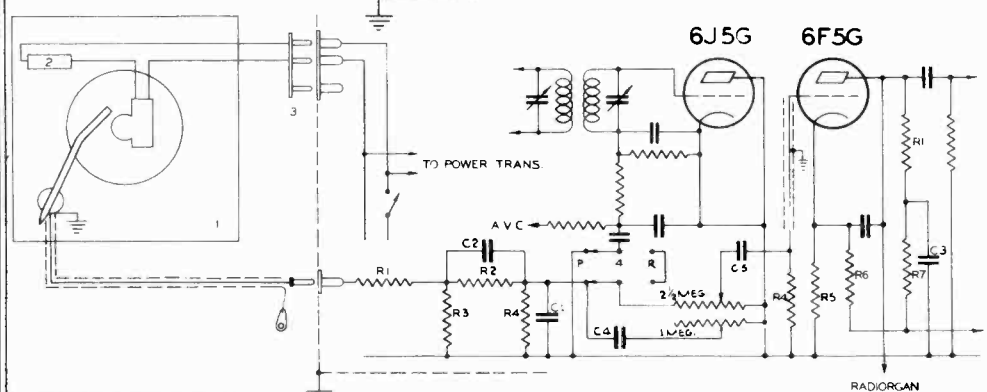
DIAG Nº	PART Nº	DESCRIPTION	
C1	22-1040	.02 MFD	200 V
C2	22-82	.001 MFD	600 V
R1	63-597	470M OHM	¼ W
R2	63-595	100M OHM	¼ W
R3	63-604	10 MEGOHM	¼ W
* R4	63-151	1.5 M OHM	1 W
	* R4 SAME AS R7 ON 6A02 DIAGRAM		
1	85-181	AUTOMATIC STOP SWITCH	
2	142-26	PHONO PICK-UP	
3	58-86	A.C. PLUG	
4	85-230	PHONO-RADIO SWITCH	
5	52-188	CABLE & PLUG	

ON THIS CHASSIS, TRIMMER "M" IS PART Nº 22-305 & TRIMMER "G" IS NOT USED

PHONO CIRCUIT DATA

MODEL	SPEAKER
6S580	49-387 5"

CHASSIS Nº6A04

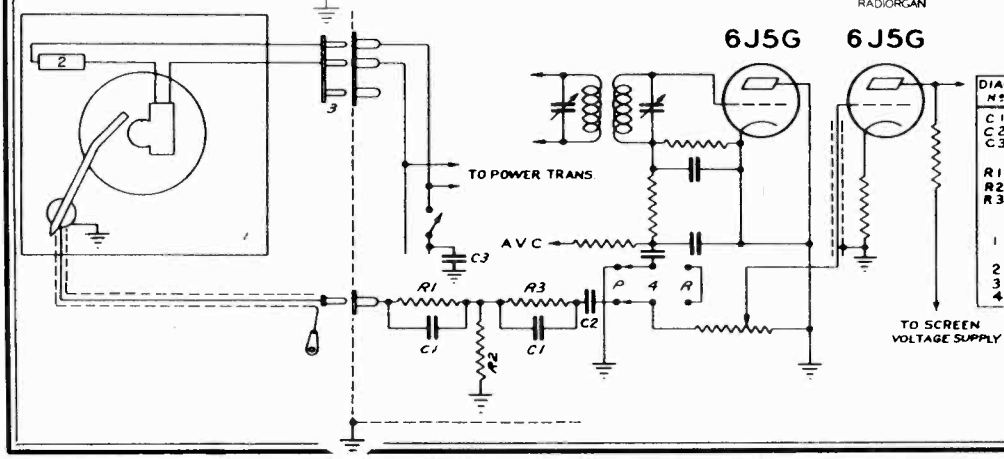


DIAG Nº	PART Nº	DESCRIPTION	
C1	22-182	.00025MFD.	600 V
C2	22-954	.00035 MFD	600 V
C3	22-825	.1 MFD.	400 V
C4	22-326	.003 MFD.	400 V
C5	22-830	.02 MFD.	400 V
R1	63-296	220 M OHM	¼ W
R2	63-597	470 M OHM	¼ W
R3	63-596	330 M OHM	¼ W
R4	63-271	1 MEG.	¼ W
R5	63-1103	390 OHM WIREWND.	½ W
R6	63-121	100 M OHM	1 W
R7	63-593	47 M OHM	¼ W
R8	63-1117	VOLUME CONTROL	
1	169-42	WEBSTER AUTOMATIC RECORD PLAYER	
2	85-191	A.C. SWITCH	
3	58-85	A.C. PLUG	
4	85-228	PHONO.-RADIO SW.	

PHONO CIRCUIT DATA

MODEL	SPEAKER
8S587	49-397 12"
8S588	49-397 12"

CHASSIS NO. 8A03



DIAG Nº	PART Nº	DESCRIPTION	
C1	22-954	.00035 MFD.	600 V.
C2	22-887	.001 MFD.	600 V.
C3	22-1065	.0025 MFD.	600 V.
R1	63-597	470 M OHM	¼ W.
R2	63-657	330 M OHM	¼ W.
R3	63-271	1 MEGOHM	¼ W.
1	169-42	WEBSTER AUTOMATIC RECORD PLAYER	
2	85-191	A.C. SWITCH	
3	58-85	A.C. PLUG	
4	85-228	PHONO-RADIO SW.	

PHONO CIRCUIT DATA

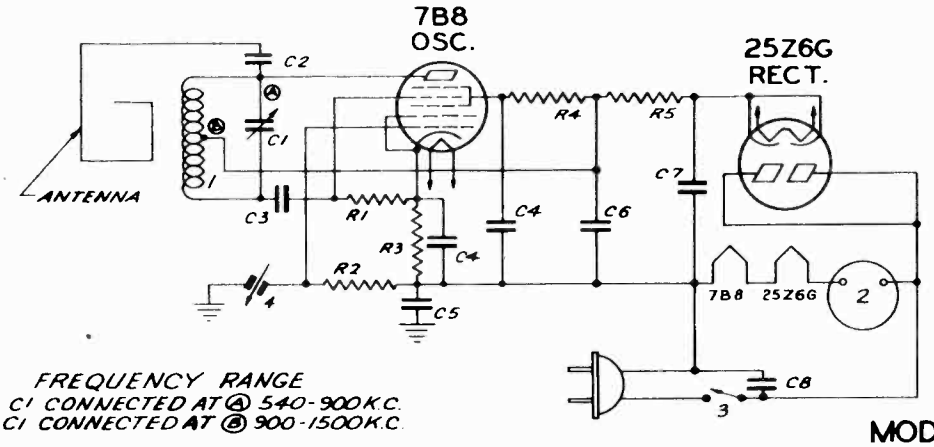
MODEL	SPEAKER
12S595Z	49-401 15"

CHASSIS Nº 12A2

ZENITH RADIO CORP.

MODEL S8500Z
MODEL S9000

C2 WAS 22-162 | 8-3-40

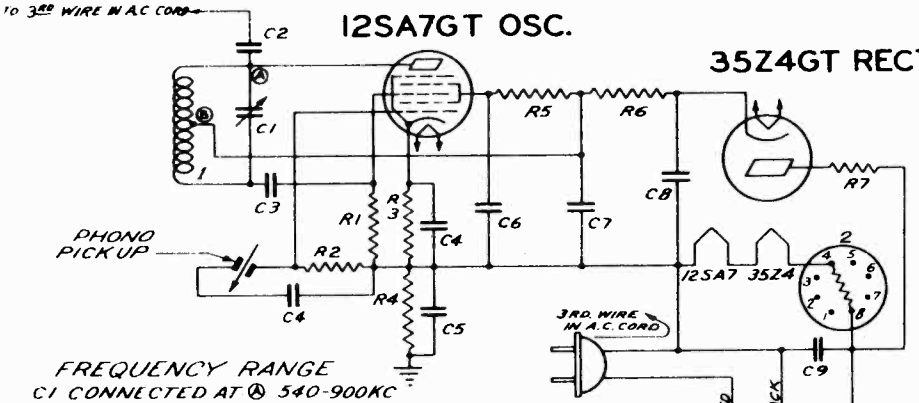


FREQUENCY RANGE
C1 CONNECTED AT Ⓐ 540-900K.C.
C1 CONNECTED AT Ⓑ 900-1500K.C.

MODELS
S8500Z

DIAG. Nº	PART Nº	DESCRIPTION		DIAG. Nº	PART Nº	DESCRIPTION	
C1	22-690	TUNING CONDENSER		R2	63-464	1 MEGOHM	1/4 W.
C2	22-127	25 MMFD.	600 V.	R3	63-581	470 OHM	1/4 W.
C3	22-182	.00025 MFD.	600 V.	R4	63-964	4700 OHM	1/2 W.
C4	22-829	.05 MFD.	200 V.	R5	63-707	4700 OHM	1/4 W.
C5	22-827	.1 MFD.	200 V.				
C6	22-1061	8 MFD. ELECTROLYTIC	150 V.				
C7		16 MFD. "	150 V.	1	58611	OSC. COIL ASSEM.	
C8	22-869	.05 MFD.	400 V.	2	141-85	MOTOR (60~)	
				3	85-191	A.C. SWITCH	
				4	142-30	PICKUP	
R1	63-593	47M OHM	1/4 W.				

PHONOGRAPH OSCILLATOR
ZENITH RADIO CORPORATION
CHICAGO ILL.



FREQUENCY RANGE
C1 CONNECTED AT Ⓐ 540-900KC
C1 CONNECTED AT Ⓑ 900-1500KC

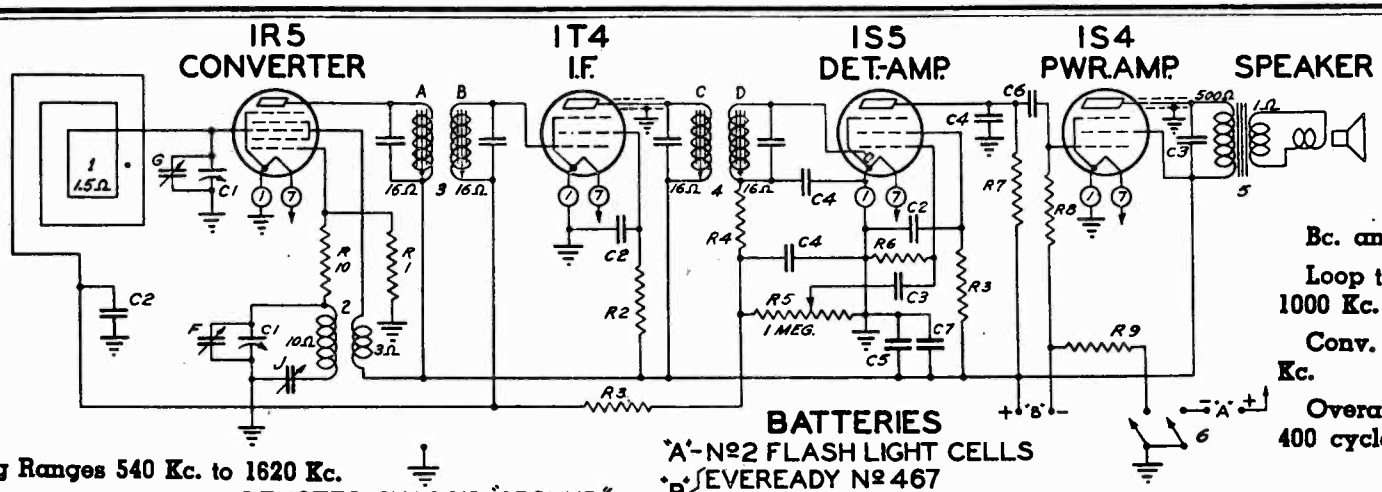
MODEL
S9000

DIAG Nº	PART Nº	DESCRIPTION		DIAG Nº	PART Nº	DESCRIPTION	
C1	22-690	TUNING CONDENSER		R3	63-701	470 OHM	1/4 W.
C2	22-127	25 MMFD.	600 V.	R4	63-296	220M OHM	1/4 W.
C3	22-182	.00025 MFD.	600 V.	R5	63-964	4700 OHM	1/2 W.
C4	22-829	.05 MFD.	200 V.	R6	63-803	2200 OHM	1/2 W.
C5	22-827	.1 MFD.	200 V.	R7	63-575	47 OHM	1/4 W.
C6	22-243	.01 MFD.	400 V.				
C7	22-876	8 MFD. ELECTROLYTIC	150 V.				
C8		40 MFD. "	150 V.	1	58611	OSC. COIL ASSEM.	
C9	22-828	.05 MFD.	400 V.	2	100-76	BALLAST TUBE	
				3	52-208	3 PRONG RECEPTACLE	
R1	63-591	22 M OHM	1/4 W.				
R2	63-271	1 MEGOHM	1/4 W.				

PHONOGRAPH OSCILLATOR
ZENITH RADIO CORPORATION
CHICAGO. ILL.

MODEL 4K600, Chassis 4B01

ZENITH RADIO CORP.



Tuning Ranges 540 Kc. to 1620 Kc.

Stage Gains:

Bc. and 455 Kc. I.F.

Loop to Conv. grid down 1/3× at 1000 Kc.

Conv. grid to I.F. grid 49× at 455 Kc.

Overall audio 317× at .05 watt, 400 cycles.

MODEL SPEAKER
4K600 49-433 3½"

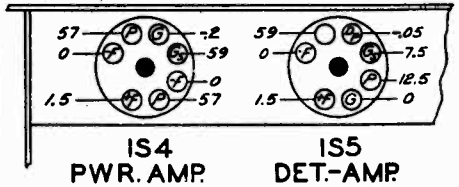
I.F. FREQUENCY 455 KC.
4 TUBE SUPERHETERODYNE
1½ V.-BATTERY-PORTABLE
CHASSIS Nº 4B01

12/9/40

1-29-41 | R10 ADDED

DIAG. Nº	PART Nº	DESCRIPTION		DIAG. Nº	PART Nº	DESCRIPTION		DIAG. Nº	PART Nº	DESCRIPTION
C1	22-1167	TWO GANG VARIABLE		R3	63-724	4.7 MEGOHM	¼W.	4	95-781	2ND I.F. TRANS.
C2	22-1174	.01 MFD.	125V.	R4	63-719	47M OHM	¼W.	5	95-779	SPKR. TRANS.
C3	22-1169	.001 MFD.	600V.	R5	63-1176	VOLUME CONTROL		6	85-267	PWR. SWITCH
C4	22-162	.0001 MFD.	600V.	R6	63-1093	15 MEGOHM	½W.			
C5	22-1176	5 MFD. ELECTROLYTIC	6V.	R7	63-464	1 MEGOHM	½W.			
C6	22-1175	.005 MFD.	600V.	R8	63-723	3.3 MEGOHM	½W.			
C7	22-1188	.05 MFD.	200V.	R9	63-749	680 OHM	½W.	A		1ST I.F.T. PRI.
				R10	63-1234	680 OHM	¼W.	B		1ST I.F.T. SEC.
								C		2ND I.F.T. PRI.
								D		2ND I.F.T. SEC.
R1	63-715	100 M OHM	½W.	1	S9385	WAVEMAGNET ASSEMBLY		F		B'DCAST OSCILLATOR
R2	63-765	33M OHM	½W.	2	S9354	OSC. COIL ASSEMBLY		G		B'DCAST ANTENNA
				3	95-780	1ST I.F. TRANS.		J	22-1166	B'DCAST PADDER

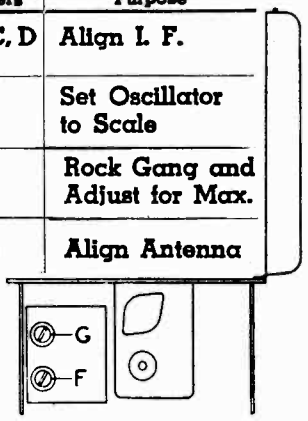
Operation	Connect Test Oscillator to	Dummy Antenna	Input Signal Frequency	Band	Set Dial At	Trimmers	Purpose
1	Converter Grid	.1 mfd.	455 Kc.	—	1600 Kc.	A, B, C, D	Align I. F.
2	1 Turn Loop Made from Generator Leads. Diameter Approx. 10" See Note!	—	1600 Kc.	—	1600 Kc.	F	Set Oscillator to Scale
3		—	600 Kc.	—	600 Kc.	J	Rock Gang and Adjust for Max.
4		—	1400 Kc.	—	1400 Kc.	G	Align Antenna

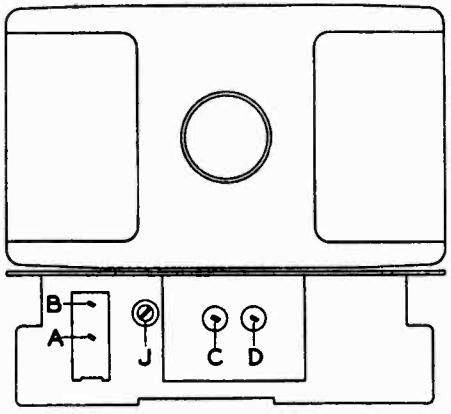


All voltages measured with a 20,000 ohm per volt meter from chassis to socket contact indicated.

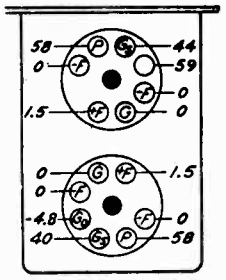
All voltages are positive D.C. unless marked otherwise.

Volume control full on.



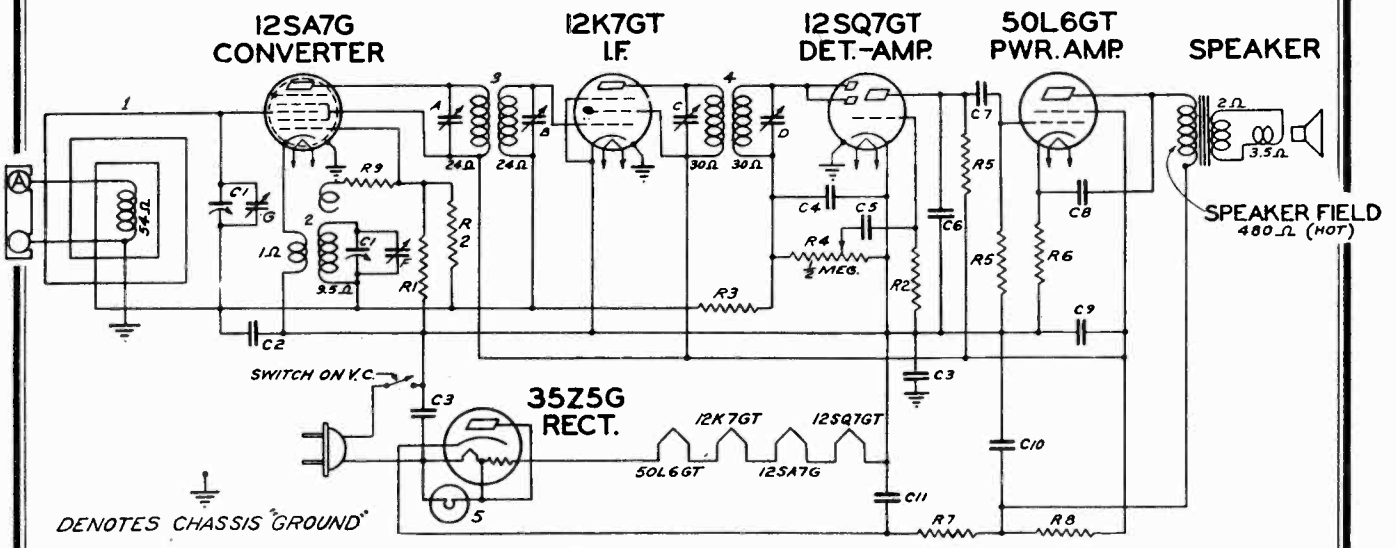


TRIMMER LOCATIONS



ZENITH RADIO CORP.

MODELS 5D610, 5D610W
5D625, Chassis 5B01



Power output 1.3 watts.

Tuning Ranges 540 Kc to 1620 Kc.

MODEL	SPEAKER
5 D 610	49-439 4"
5 D 625	49-439 4"

I.F FREQUENCY 455 KC.
5 TUBE SUPERHETERODYNE
CHASSIS Nº 5B01 A.C.-D.C.

1-8-41 R9 ADDED

DIAG. Nº	PART Nº	DESCRIPTION		DIAG. Nº	PART Nº	DESCRIPTION		DIAG. Nº	PART Nº	DESCRIPTION
C1	22-1185	TWO-GANG VARIABLE		R1	63-589	10 M OHM	½ W.	2	39450	OSC. COIL ASSEMBLY
C2	22-829	.05 MFD.	200 V.	R2	63-976	15 MEGOHM	½ W.	3	95-696	1ST I.F. TRANS.
C3	22-1017	.05 MFD.	200 V.	R3	63-500	2.2 MEGOHM	½ W.	4	95-794	2ND I.F. TRANS.
C4	22-953	.0002 MFD.	600 V.	R4	63-1112	VOLUME CONTROL		5	100-67	PILOT LIGHT 6.3V, .15A.
C5	22-492	.002 MFD.	600 V.	R5	63-597	470M OHM	½ W.			
C6	22-854	.0005 MFD.	600 V.	R6	63-1171	75 OHM WIREWOUND	1 W.	A		1ST I.F. TRANS. PRI.
C7	22-243	.01 MFD.	400 V.	R7	63-1172	100 OHM WIREWOUND	2 W.	B		1ST I.F. TRANS. SEC.
C8	22-1182	.01 MFD.	400 V.	R8	63-1173	1500 OHM	1 W.	C		2ND I.F. TRANS. PRI.
C9		(20 MFD. ELECTROLYTIC	150 V.	R9	63-579	220 OHM	¼ W.	D		2ND I.F. TRANS. SEC.
C10	22-1186	20 MFD. ELECTROLYTIC	150 V.					F		BROADCAST OSC. (ON GANG)
C11		30 MFD. ELECTROLYTIC	150 V.		59452	WAVEMAGNET ASSEMBLY		G		BROADCAST ANT. (ON GANG)

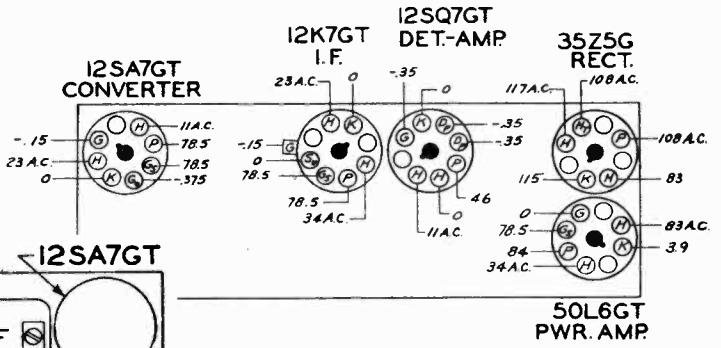
Stage Gains:

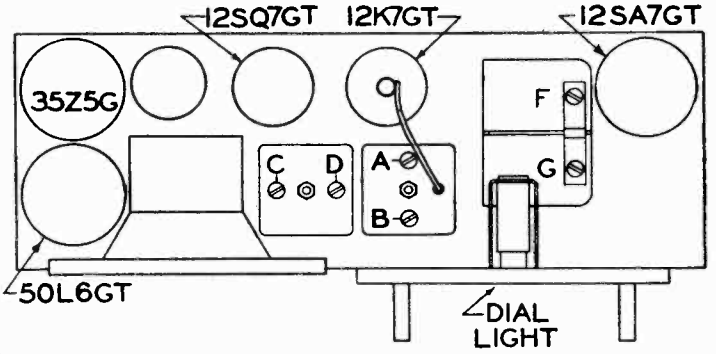
Bc. and 455 Kc. I.F.

Ant. to Conv. grid 7× at 1000 Kc.

Conv. grid to I.F. grid 74× at 455 Kc.

Overall audio 225× at .05 watt 400 cycles.





TRIMMER LOCATIONS

SOCKET VOLTAGES

All voltages measured with a 20,000 ohm per volt meter from chassis to socket contact indicated.

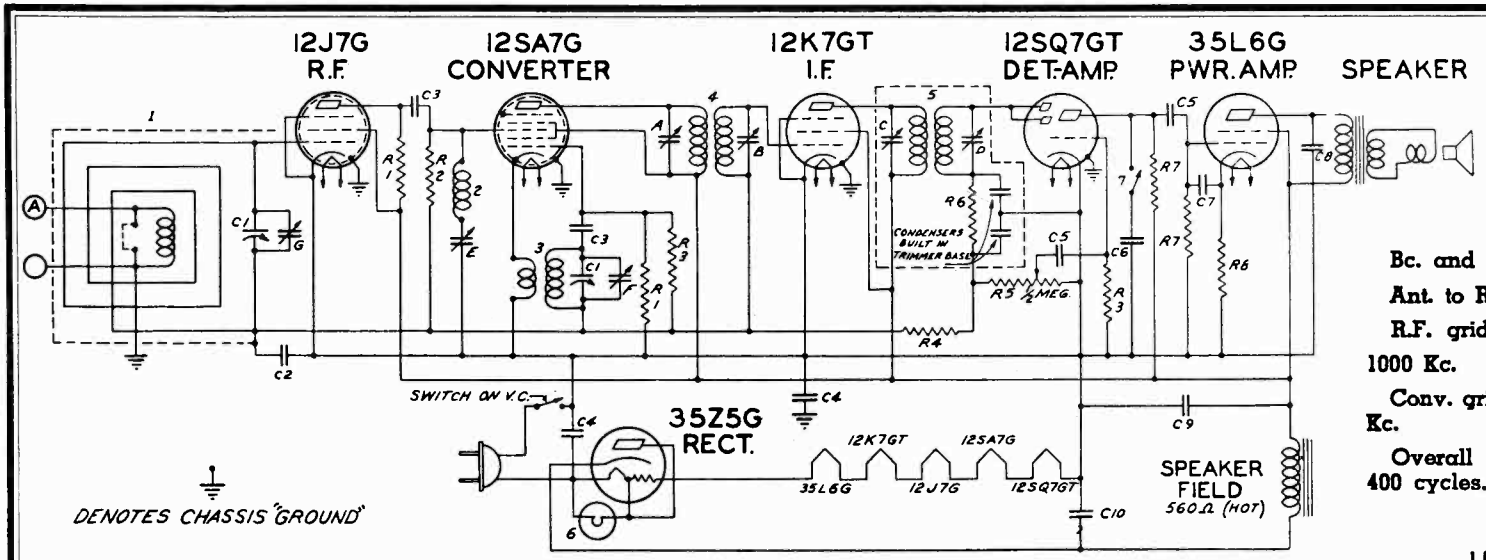
All voltages are positive D.C. unless marked otherwise.

Volume control full on.

Line voltage 117 A.C.

Power consumption 29 watts.

Operation	Connect Test Oscillator to	Dummy Antenna	Input Signal Frequency	Band	Set Dial At	Trimmers	Purpose
1	Converter Grid	.1 mfd.	455 Kc.	—	600 Kc.	A, B, C, D	Align I. F.
2	1 Turn Loop Made from Generator	—	1500 Kc.	—	1500 Kc.	F	Set Oscillator to Scale
3	Leads. See Note!	—	1500 Kc.	—	1500 Kc.	G	Adjust for Maximum



Stage Gains:

Bc. and 455 Kc. I.F.

Ant. to R.F. grid 5.5× at 1000 Kc.

R.F. grid to conv. grid 6.2× at 1000 Kc.

Conv. grid to I.F. grid 51× at 455 Kc.

Overall audio 289× at .25 watt. 400 cycles.

DIAG. Nº	PART Nº	DESCRIPTION		DIAG. Nº	PART Nº	DESCRIPTION		DIAG. Nº	PART Nº	DESCRIPTION
C1	22-1184	TWO-GANG VARIABLE		R2	63-591	22 M. OHM	½ W.	4	95-760	1ST I.F. TRANS.
C2	22-829	.05 MFD.	200V.	R3	63-976	15 MEGOHM	½ W.	5	95-790	2ND I.F. TRANS.
C3	22-162	.0001 MFD.	600V.	R4	63-600	2.2 MEGOHM	½ W.	6	100-67	PILOT LIGHT 6.3V. .15A.
C4	22-1017	.05 MFD.	200V.	R5	63-1130	VOLUME CONTROL		7	85-270	TONE CONTROL SWITCH
C5	22-243	.01 MFD.	400V.	R6	63-713	47 M. OHM	½ W.			
C6	22-492	.002 MFD.	600V.	R7	63-597	470 M. OHM	½ W.			
C7	22-854	.0005 MFD.	600V.	R8	63-686	1500 OHM WIREWOUND	½ W.	A		1ST I.F. TRANS. PRI.
C8	22-1049	.03 MFD.	400V.					B		1ST I.F. TRANS. SEC.
C9		20 MFD. ELECTROLYTIC	150V.					C		2ND I.F. TRANS. PRI.
C10	22-1014	20 MFD. ELECTROLYTIC	150V.					D		2ND I.F. TRANS. SEC.
				1	59465	WAVEMAGNET ASSEMBLY		E	22-1015	WAVE TRAP
				2	58326	WAVE TRAP COIL ASSEMBLY		F		BROADCAST OSC. (ON GANG)
R1	63-589	10M OHM	½ W.	3	59437	OSC. COIL ASSEMBLY		G		BROADCAST ANT. (ON GANG)

All voltages measured with a 20,000 ohm per volt meter from chassis to socket contact indicated.

All voltages are positive D.C. unless marked otherwise.

Volume control full on.

Line voltage 117 A.C.

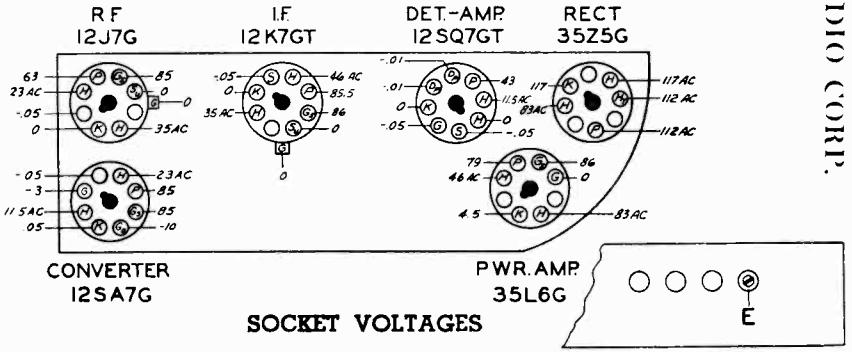
Power consumption 25.5 watts.

Power output 1. watt.

Tuning Ranges 540 Kc. to 1600 Kc.

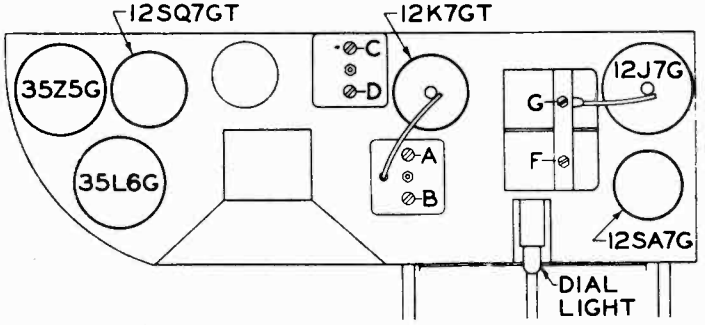
MODEL 6 D 516 **SPEAKER 49-436 5"**

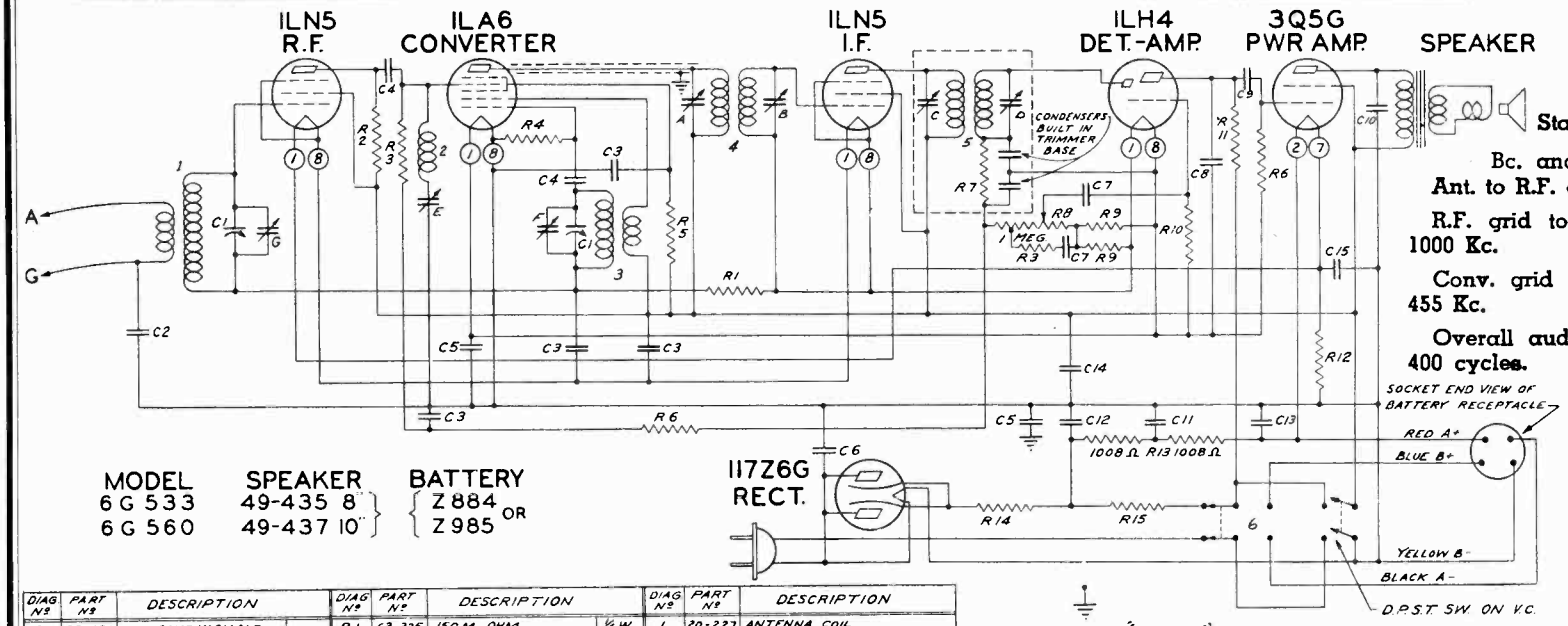
I.F FREQUENCY 455 KC.
6 TUBE SUPERHETERODYNE
CHASSIS Nº 6A24 A.C.-D.C.



Operation	Connect Test Oscillator to	Dummy Antenna	Input Signal Frequency	Band	Set Dial At	Trimmers	Purpose
1	Converter Grid	.5 mfd.	455 Kc.	BC	600 Kc.	A, B, C, D	Align I. F.
2	R. F. Grid	.5 mfd.	455 Kc.	"	600 Kc.	E	Adj. Wave Trap for Minimum
3	1 Turn Loop Made from Generator Leads	———	1600 Kc.	"	1600 Kc.	F	Set Oscillator to Scale
4	See Note!	———	1400 Kc.	"	1400 Kc.	G	Align Antenna

SOCKET VOLTAGES





Stage Gains:

Bc. and 455 Kc. I.F.

Ant. to R.F. grid 5× at 1000 Kc.

R.F. grid to conv. grid 6.5× at 1000 Kc.

Conv. grid to I.F. grid 49.1× at 455 Kc.

Overall audio 322× at .05 watt. 400 cycles.

MODEL	SPEAKER	BATTERY
6G533	49-435 8"	Z884 OR
6G560	49-437 10"	Z985

DENOTES CHASSIS "GROUND"

CHANGEOVER SWITCH SHOWN IN POSITION FOR 115 V. A.C.-D.C. OPERATION.

DIAG Nº	PART Nº	DESCRIPTION		DIAG Nº	PART Nº	DESCRIPTION		DIAG Nº	PART Nº	DESCRIPTION
C1	22-1181	TWO GANG VARIABLE		R1	63-325	150 M OHM	½ W.	1	20-227	ANTENNA COIL
C2	22-1183	.01 MFD.	400 V	R2	63-590	15 M OHM	½ W.	2	S 8326	WAVE TRAP COIL ASSEMBLY
C3	22-829	.05 MFD.	200 V	R3	63-595	100 M OHM	½ W.	3	S 9446	OSCILLATOR COIL ASSEMBLY
C4	22-162	100 MMFD.	600 V	R4	63-654	180 M OHM	½ W.	4	95-792	1ST I.F. TRANSFORMER
C5	22-827	.1 MFD.	200 V	R5	63-592	33 M OHM	½ W	5	95-793	2ND I.F. TRANSFORMER
C6	22-1017	.05 MFD.	200 V	R6	63-600	2.2 MEGOHM	½ W	6	85-171	CHANGEOVER SWITCH
C7	22-492	.002 MFD.	600 V	R7	63-713	47 M OHM	½ W			
C8	22-470	.00015 MFD.	600 V	R8	63-1178	VOLUME CONTROL				
C9	22-196	.01 MFD.	600 V	R9	63-585	2200 OHM	½ W.			
C10	22-448	.004 MFD.	600 V	R10	63-976	15 MEGOHM	½ W	A		1ST I.F. TRANS. PRI.
C11	22-1026	20 MFD. ELECTROLYTIC	150 V	R11	63-271	1 MEGOHM	½ W.	B		1ST I.F. TRANS. SEC.
C12		40 MFD. ELECTROLYTIC	150 V	R12	63-1097	870 OHM WIREWOUND	1 W.	C		2ND I.F. TRANS. PRI.
C13		20 MFD. ELECTROLYTIC	25 V	R13	63-1132	2-SECTION CANDOHM		D		2ND I.F. TRANS. SEC.
C14	22-1159	40 MFD. ELECTROLYTIC	150 V	R14	63-1096	140 OHM WIREWOUND	2 W.	E	22-1015	WAVE TRAP
C15		40 MFD. ELECTROLYTIC	25 V	R15	63-1156	1800 OHM	½ W.	F		BROADCAST OSC. (ON GANG)
								G		BROADCAST ANT. (ON GANG)

I.F. FREQUENCY 455KC.
6 TUBE SUPERHETERODYNE
CHASSIS Nº 6A25
110 VOLT A.C.-D.C.-BATTERY PACK

Power output .360 watts.

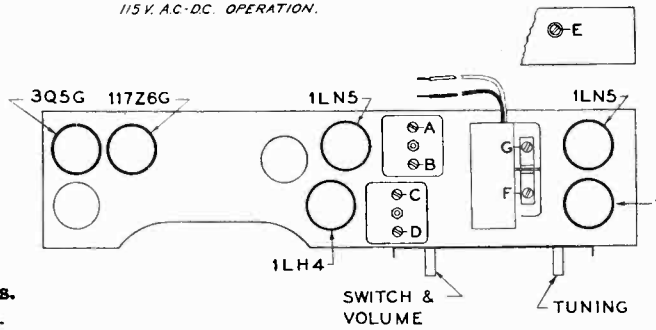
Tuning Ranges 540 Kc. to 1620 Kc.

Volume control full on.

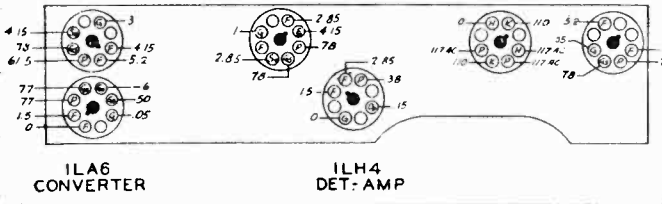
Line voltage 117 A.C.

Power consumption 20 watts.

Operation	Connect Test Oscillator to	Dummy Antenna	Input Signal Frequency	Band	Set Dial At	Trimmers	Purpose
1	Converter Grid	.5 mfd.	455 Kc.	BC	600 Kc.	A, B, C, D	Align I. F.
2	Converter Grid	.5 mfd.	455 Kc.	BC	600 Kc.	E	Adj. Wave Trap for Minimum
3	Ant.—Gnd.	200 mmf.	1620 Kc.	BC	1620 Kc.	F	Set Oscillator to Scale
4	Ant.—Gnd.	200 mmf.	1400 Kc.	BC	1400 Kc.	G	Align Antenna



TRIMMER LOCATIONS



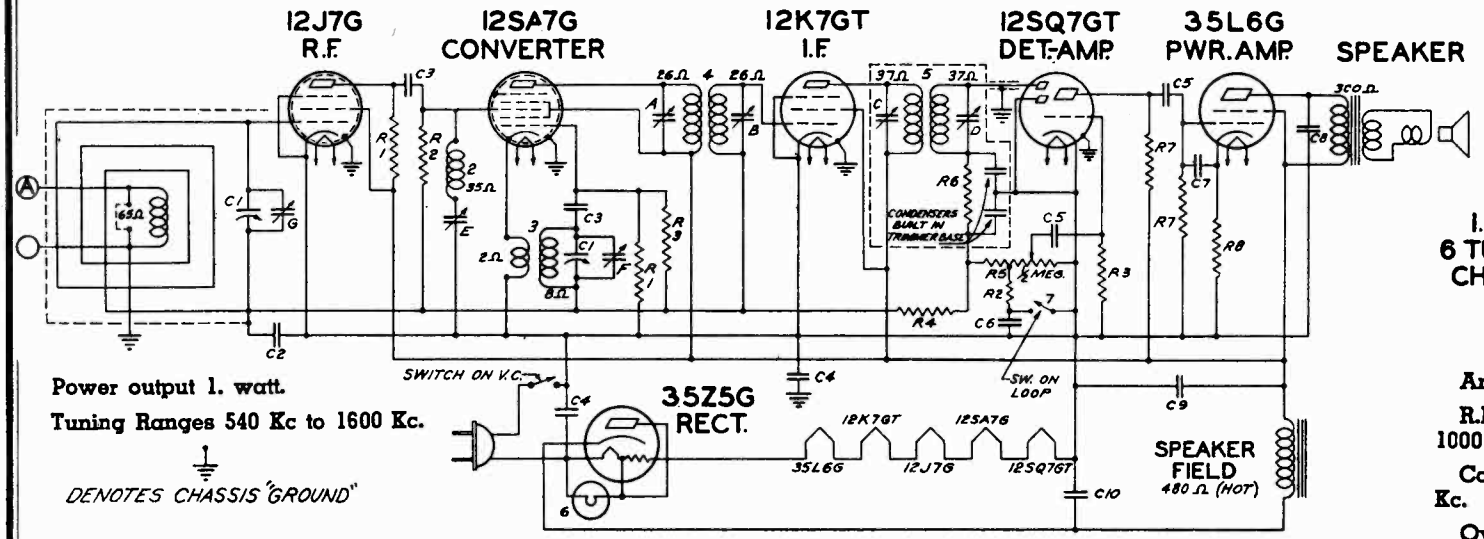
ZENITH RADIO CORP.

MODELS 6G533, 6G560, Chas. 6A25

ZENITH PAGE 12-33

MODELS 6D520, 6D520W
6D538, Chassis 6A26

ZENITH RADIO CORP.



Power output 1. watt.

Tuning Ranges 540 Kc to 1600 Kc.

DENOTES CHASSIS "GROUND"

MODEL	SPEAKER
6D520	49-385 4"
6D538	49-385 4

Volume control full on.

Line voltage 117 A.C.

Power consumption 25.5 watts.

I.F. FREQUENCY 455 KC.
6 TUBE SUPERHETERODYNE
CHASSIS Nº 6A26 A.C.-D.C.

Stage Gains:

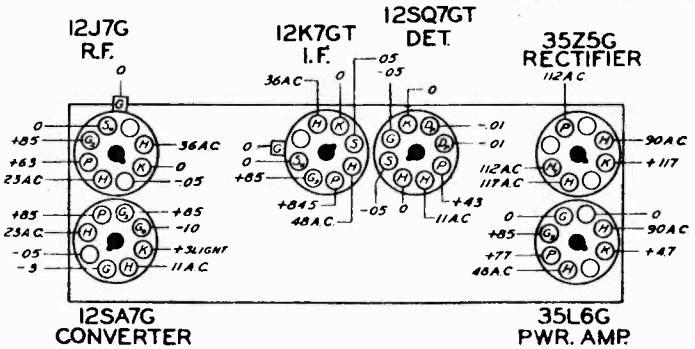
Bc. and 455 Kc. I.F.

Ant. to R.F. grid 5.5× at 1000 Kc.

R.F. grid to conv. grid 6.2× at 1000 Kc.

Conv. grid. to I.F. grid 51× at 455 Kc.

Overall audio 289× at .25 watt. 400 cycles.

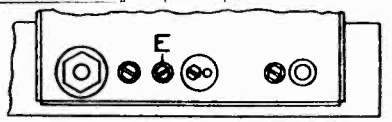


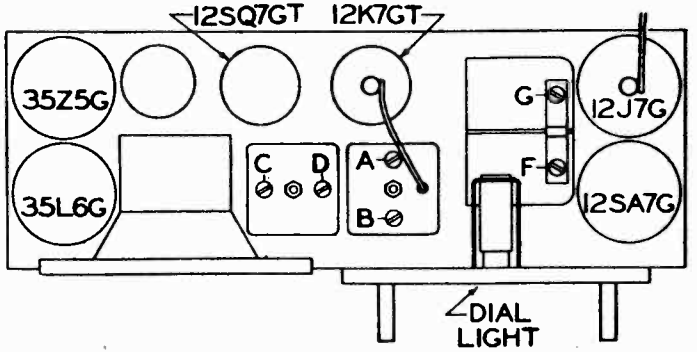
SOCKET VOLTAGES

DIAG. Nº	PART Nº	DESCRIPTION		DIAG. Nº	PART Nº	DESCRIPTION		DIAG. Nº	PART Nº	DESCRIPTION
C1	22-1006	TWO-GANG VARIABLE		R2	63-591	22 M OHM	½ W.	4	95-696	1ST I.F. TRANS.
C2	22-829	.05 MFD.	200 V.	R3	63-1093	15 MEGOHM	½ W.	5	95-697	2ND I.F. TRANS.
C3	22-162	.0001 MFD.	600 V.	R4	63-600	2.2 MEGOHM	½ W.	6	100-67	PILOT LIGHT 6.3 V. .15 A.
C4	22-1017	.05 MFD.	200 V.	R5	63-1149	VOLUME CONTROL		7	85-257	TONE CONTROL SWITCH
C5	22-243	.01 MFD.	400 V.	R6	63-713	47 M OHM	½ W.			
C6	22-826	.01 MFD.	200 V.	R7	63-597	470 M OHM	½ W.			
C7	22-854	.0005 MFD.	600 V.	R8	63-686	150 OHM WIREWOUND	½ W.	A		1ST I.F. TRANS. PRI.
C8	22-1182	.01 MFD.	400 V.			1-23-41 R2 AT V.C. ADDED		B		1ST I.F. TRANS. SEC.
C9		20 MFD. ELECTROLYTIC	150 V.			2-6-41 T.C. CIRCUIT CHANGED		C		2ND I.F. TRANS. PRI.
C10	22-1014	20 MFD. ELECTROLYTIC	150 V.			2-13-41 DIODE PLATE TO CATH.		D		2ND I.F. TRANS. SEC.
				1	58356	WAVEMAGNET ASSEMBLY		E	22-1015	WAVE TRAP
				2	58326	WAVE TRAP COIL ASSEMBLY		F		BROADCAST OSC. (ON GANG)
R1	63-589	10M OHM	½ W.	3	58336	OSC. COIL ASSEMBLY		G		BROADCAST ANT. (ON GANG)

All voltages measured with a 20,000 ohm per volt meter from chassis to socket contact indicated.

All voltages are positive D.C. unless marked otherwise.





Operation	Connect Test Oscillator to	Dummy Antenna	Input Signal Frequency	Band	Set Dial At	Trimmers	Purpose
1	Converter Grid	.5 mfd.	455 Kc.	BC	600 Kc.	A, B, C, D	Align I. F.
2	R. F. Grid	.5 mfd.	455 Kc.	BC	600 Kc.	E	Adj. Wave Trap for Minimum
3	1 Turn Loop Made from Generator Leads. See Note!	——	1600 Kc.	BC	1600 Kc.	F	Set Oscillator to Scale
4		——	1400 Kc.	BC	1400 Kc.	G	Align Antenna

ZENITH RADIO CORP.

MODELS 6S546, 6S556
6S532
MODELS 10H571R, 10H573

Operation	Connect Test Oscillator to	Dummy Antenna	Input Signal Frequency	Band	Set Dial At	Trimmers	Purpose
1	Converter Grid	.5 mfd.	455 Kc.	BC	600 Kc.	A, B, C, D	Align I. F.
2	R. F. Grid	.5 mfd.	455 Kc.	BC	600 Kc.	E	Adj. Wave Trap for Minimum
3	1 Turn Loop Made from Generator Leads. See Note!	—	18 Mc.	SW	18 Mc.	K	Set Oscillator to Scale
4		—	1500 Kc.	BC	1500 Kc.	F	Set Oscillator to Scale
5		—	1500 Kc.	BC	1500	G	Align Atenna
6		—	600 Kc.	BC	600 Kc.	J	Rock Gang and Adjust for Max.
7		—	16 Mc.	SW	16 Mc.	M	Align Antenna

ALIGNMENT AND TRIMMER LOCATIONS FOR MODELS 6A05 6A05R

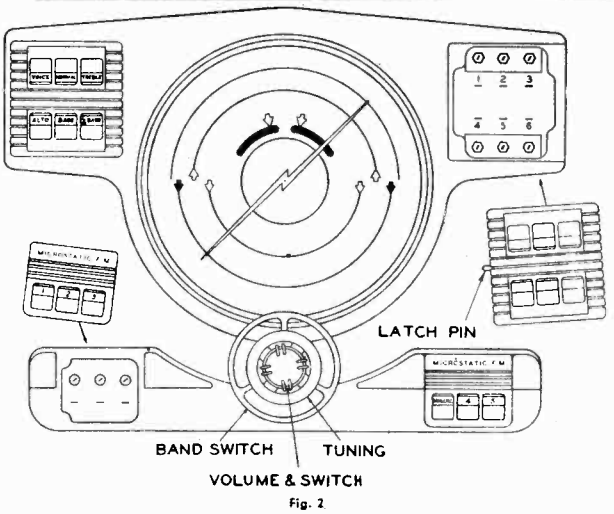
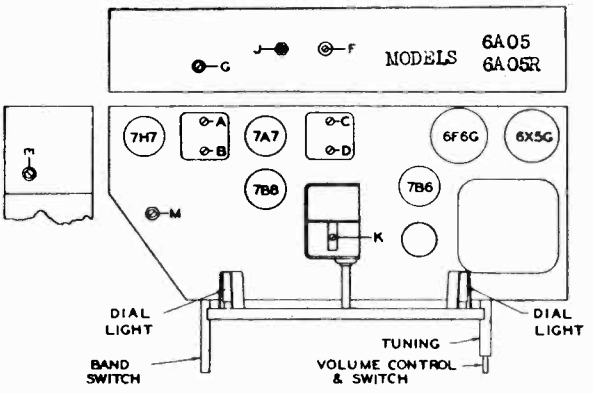


Fig. 2



TRIMMER LOCATIONS

MODELS 10H571R, 10H573

AUTOMATIC

It will be necessary to first set the automatic tuning adjustments to six preselected stations before the automatic tuning can be used.

Each button and its associated tuning adjustment will tune over a portion of the broadcast band, and any station within its tuning range may be selected for automatic tuning on that button.

The tuning ranges are as follows: (See Fig. 2)

No. 1 button—upper left .....545 K.C. to 940 K.C.
No. 2 button—upper center ..600 K.C. to 1050 K.C.
No. 3 button—upper right ....660 K.C. to 1150 K.C.
No. 4 button—lower left .....740 K.C. to 1300 K.C.
No. 5 button—lower center ..880 K.C. to 1550 K.C.
No. 6 button—lower right ....880 K.C. to 1550 K.C.

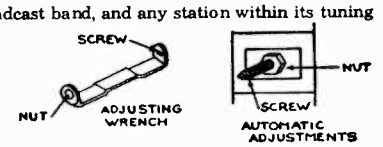


Fig. 4.

To adjust the automatic tuning proceed as follows:

A. Remove the automatic cover plate by pressing on latch pin and lifting away from escutcheon.

B. Select a station within the range of the No. 1 button.

C. Turn the band switch to Broadcast and then tune in the selected station on the dial—then turn band switch to Automatic position.

D. Press the No. 1 button and tune in the same station on the adjacent automatic adjustments by using the special wrench furnished with the receiver. (See Fig. 4.) First, adjust the screw and then the hexagonal nut to the setting which gives the loudest and clearest reception on the desired station. Repeat the operation for greatest accuracy.

AUTOMATIC-FREQUENCY MODULATION BAND

The six push buttons across the lower part of the control panel (See Figure 2) provide means of tuning F.M. stations either manually or automatically. Five of these push buttons may be preset for five F.M. stations as follows:

(1) Select station within range of No. 1 button.

(2) Remove covers from adjusting screws by pulling latch pin and lifting covers.

(3) Turn band switch to F.M., press No. 1 button and tune in desired station on adjacent adjustment, using adjustment wrench.

(4) Follow the same procedure on remaining 4 buttons.

(5) Replace covers.

The tuning range covered by each adjusting screw is as follows:

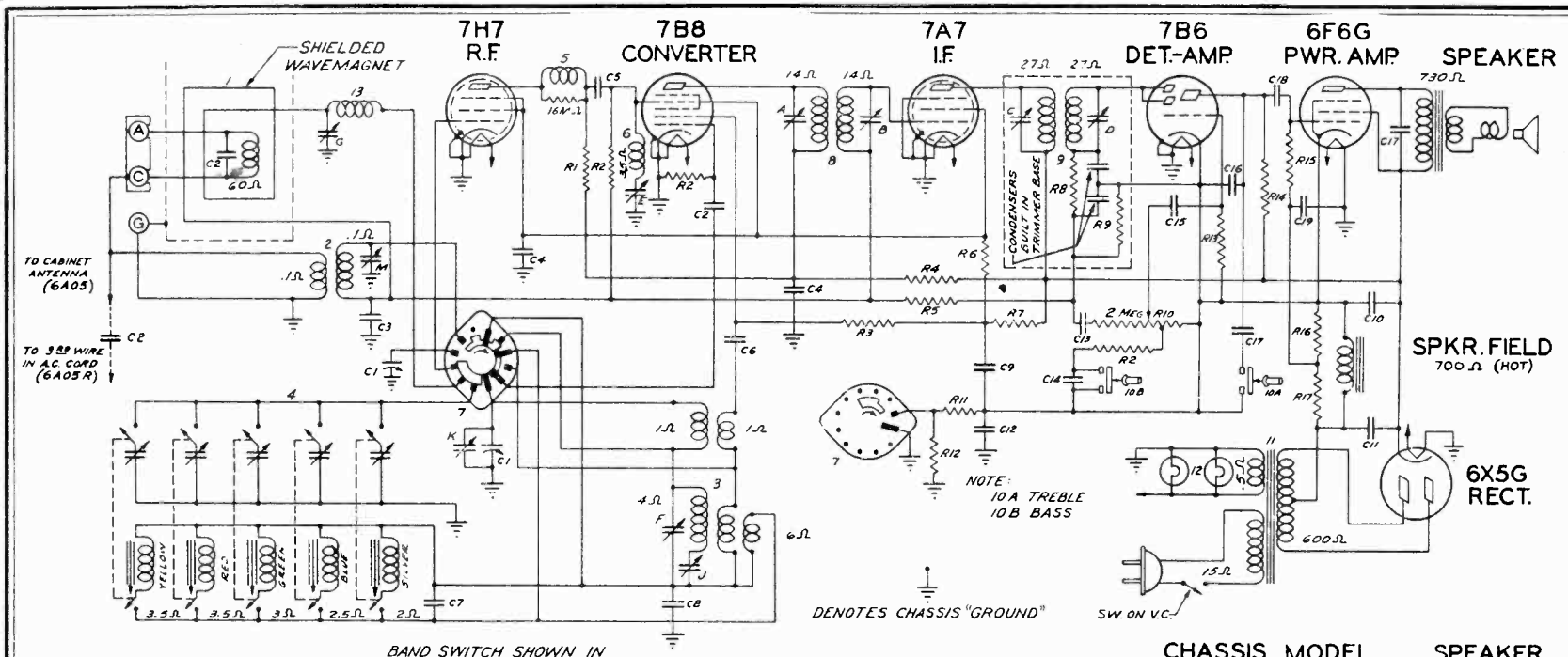
No. 1 Button — 45.5 M.C. to 50.5 M.C.
No. 2 Button — 45 M.C. to 50.5 M.C.
No. 3 Button — 43 M.C. to 49 M.C.

Manual Tuning:

No. 4 Button — 41.5 M.C. to 49.5 M.C.
No. 5 Button — 41.5 M.C. to 48 M.C.

MODELS 6S546, 6S556
Chassis 6A05; 6S532,
Chassis 6A05R

ZENITH RADIO CORP.



CHASSIS	MODEL	SPEAKER
6A05	6S546	49-388 6"
6A05	6S556	49-390 10"
6A05R	6S532	49-438 6"

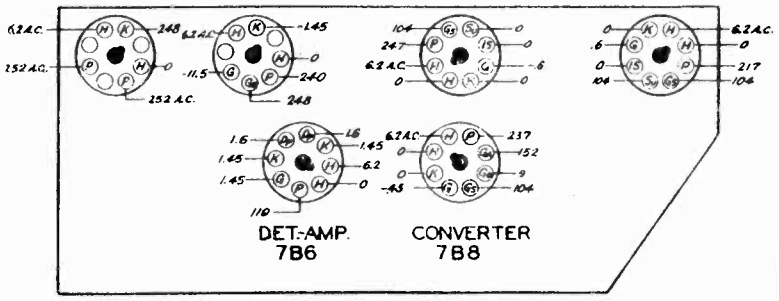
Power output 6. watts.

Tuning Ranges 545 Kc. to 1570 Kc. 5.7 Mc. to 18.3 Mc.

I.F. FREQUENCY 455 KC.
6 TUBE SUPERHETERODYNE
CHASSIS Nº 6A05 & 6A05R 2 BAND A.C

DIAG Nº	PART Nº	DESCRIPTION		DIAG Nº	PART Nº	DESCRIPTION		DIAG Nº	PART Nº	DESCRIPTION		DIAG Nº	PART Nº	DESCRIPTION
C1	22-1044	TWO GANG VARIABLE		C19	22-138	.2 MFD. 6A05	200 V.	R15	63-597	470 M OHM	½ W.	13	58474	LOOP LOADING COIL
C2	22-289	50 MMFD	600 V		22-827	.1 MFD. 6A05R	200 V.	R16	63-654	180 M OHM	¼ W			
C3	22-829	.05 MFD.	200 V					R17	63-656	270 M OHM	¼ W	A		1ST I.F. TRANS. PRI.
C4	22-828	.05 MFD.	400 V									B		1ST I.F. " SEC.
C5	22-162	.0001 MFD.	600 V	R1	63-637	4700 OHM	½ W.					C		2ND I.F. " PRI.
C6	22-182	.00025 MFD.	600 V	R2	63-593	47 M OHM	½ W.					D		2ND I.F. " SEC.
C7	22-868	COMPENSATING COND.		R3	63-150	10 M OHM	½ W.	1		WAVEMAGNET ASSEMBLY		E	22-1015	WAVE TRAP
C8	22-1022	.005 MFD.	600 V	R4	63-583	1000 OHM	½ W.	2	S8507	ANTENNA COIL ASSEMBLY		F	22-1042	BROADCAST OSCILLATOR
C9	22-1034	.5 MFD ELECTROLYTIC	450 V	R5	63-599	1.5 MEGOHM	¼ W	3	S8508	OSCILLATOR COIL ASSEMBLY		G	22-1042	BROADCAST ANTENNA
C10		15 MFD. "	350 V	R6	63-1102	15 M OHM	½ W.	4		AUTOMATIC TUNING UNIT		J	22-1023	BROADCAST PADDER
C11	22-1036	14 MFD. "	450 V	R7	63-1101	8200 OHM	2 W	5	S8359	R.F. CHOKE & RES. ASSEMBLY		K		SHORT WAVE OSC. (ON GANG)
C12	22-827	.1 MFD.	200 V	R8	63-713	47 M OHM	¼ W	6	S8326	WAVE TRAP ASSEMBLY		M	22-1042	SHORT WAVE ANTENNA
C13	22-188	.02 MFD.	400 V	R9	63-719	470 M OHM	¼ W	7	85-733	BAND SELECTOR SWITCH				
C14	22-229	.005 MFD.	600 V	R10	63-1123	VOLUME CONTROL		8	95-708	1ST I.F. TRANSFORMER				
C15	22-492	.002 MFD.	600 V	R11	63-1058	42 OHM WIREWOUND	½ W	9	95-709	2ND I.F. TRANSFORMER				
C16	22-854	.0005 MFD.	600 V	R12	63-624	68 OHM	½ W	10	S9531	TONE CONTROL SWITCH				
C17	22-448	.004 MFD.	600 V	R13	63-976	15 MEGOHM	½ W	11	95-710	POWER TRANS. 50-60 ~ 117 V.				
C18	22-830	.02 MFD.	600 V	R14	63-296	220 M OHM	¼ W	12	100-36	PILOT LIGHT 6.3 V. .25 A.				

RECT.	AMP.	I.F.	R.F.
6X5G	6F6G	7A7	7H7



Stage Gains:

Bc. and 455 Kc. I.F.

Ant. to R.F. grid 3.8× at 1000 Kc.

R.F. grid to conv. grid 7× at 1000 Kc.

Conv. grid to I.F. grid 92× at 455 Kc.

Overall audio 778× at 1 watt 400 cycles.

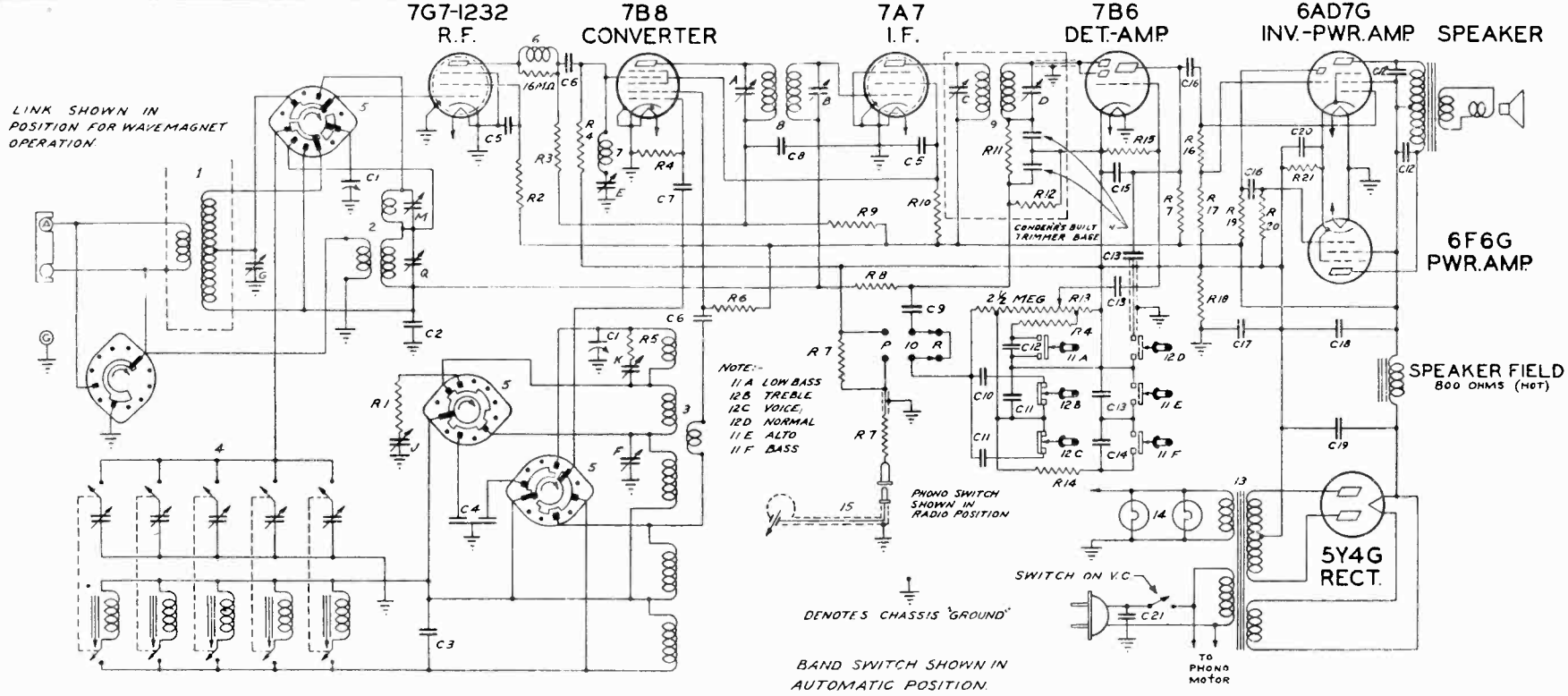
All voltages measured with a 20,000 ohm per volt meter from chassis to socket contact indicated.

All voltages are positive D.C. unless marked otherwise.

Volume control full on.

Line voltage 117 A.C.

Power consumption 60 watts.



DIAG Nº	PART Nº	DESCRIPTION		DIAG Nº	PART Nº	DESCRIPTION		DIAG Nº	PART Nº	DESCRIPTION	
C1	22-1030	TWO GANG VARIABLE						R21	63-1174	420 OHM WIREWOUND	½ W
C2	22-829	.05 MFD.	200 V								
C3	22-868	COMPENSATING COND.		R1	63-694	33 OHM	½ W				
C4	22-1037	DUAL PADDER		R2	63-260	100M OHM	½ W				
C5	22-828	.05 MFD.	400 V	R3	63-587	4700 OHM	½ W	1		WAVEMAGNET ASSEMBLY	
C6	22-182	.00025 MFD.	600 V	R4	63-593	47M OHM	½ W	2	58404	ANTENNA COIL ASSEMBLY	
C7	22-289	.50 MMFD.	600 V	R5	63-621	39 OHM	½ W	3	58403	OSCILLATOR COIL ASSEM.	
C8	22-825	.1 MFD.	400 V	R6	63-589	10 M OHM	½ W	4		AUTOMATIC TUNING ASSEM.	
C9	22-327	.02 MFD.	200 V	R7	63-296	220 M OHM	½ W	5	85-247	BAND SELECTOR SWITCH	
C10	22-954	.00035 MFD.	600 V	R8	63-599	1.5 MEGOHM	½ W	6	58359	R.F. CHOKE & RES. ASSEM.	
C11	22-470	.00015 MFD.	600 V	R9	63-605	1000 OHM	½ W	7	58326	WAVE TRAP COIL ASSEM.	
C12	22-229	.005 MFD.	600 V	R10	63-960	68 M OHM	½ W	8	95-703	1ST I.F. TRANSFORMER	
C13	22-448	.004 MFD.	600 V	R11	63-713	47 M OHM	½ W	9	95-761	2ND I.F. TRANSFORMER	
C14	22-492	.002 MFD.	600 V	R12	63-719	470 M OHM	½ W	10	85-171	PHONO-RADIO SWITCH	
C15	22-854	.0005 MFD.	600 V	R13	63-1122	VOLUME CONTROL		11	58449	TONE CONTROL ASSEM (LEFT)	
C16	22-196	.01 MFD.	600 V	R14	63-594	68 M OHM	½ W	12	58449	TONE CONTROL ASSEM (RIGHT)	
C17	22-827	.1 MFD.	200 V	R15	63-976	15 MEGOHM	½ W	13	95-756	PWR TRANS 50-60~ 117 V.	
C18		20 MFD ELECTROLYTIC	450 V	R16	63-657	330 M OHM	½ W	14	100 35	PILOT LIGHT 6.3 V. .25 A.	
C19	22-1187	20 MFD ELECTROLYTIC	450 V	R17	63-652	120 M OHM	½ W	15		PICK-UP	
C20		40 MFD ELECTROLYTIC	35 V	R18	63-975	82 OHM WIREWOUND	½ W				
C21	22-1041	.005 MFD.	600 V	R19	63-772	150 M OHM	½ W				
				R20	63-659	470 M OHM	½ W				

DIAG Nº	PART Nº	DESCRIPTION
A		1ST I.F. TRANS. PRI.
B		1ST I.F. TRANS. SEC.
C		2ND I.F. TRANS. PRI.
D		2ND I.F. TRANS. SEC.
E	22-1015	WAVETRAP
F		BROADCAST OSC. (NOTE 1)
G		BROADCAST ANT. (NOTE 2)
J		BROADCAST PADDER (NOTE 2)
K		SHORT WAVE OSC. (NOTE 1)
M		SHORT WAVE ANT. (NOTE 2)
Q		POLICE BAND ANT. (NOTE 2)

NOTES
(1) TRIMMERS F & K ARE MOUNTED ON STRIP #22-1033
(2) TRIMMERS G, J, M & Q ARE MOUNTED ON STRIP #22-1031

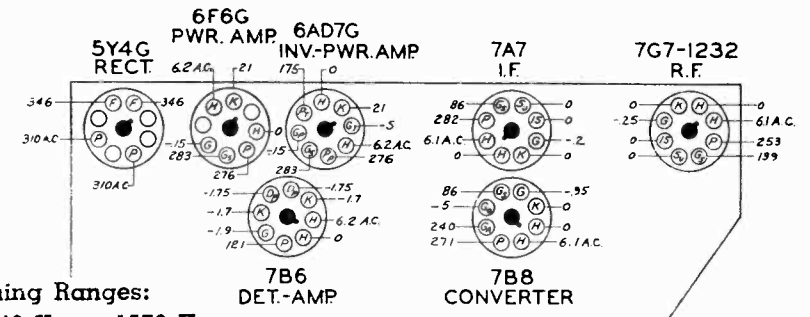
J 1 41 C20 WAS ZONED C22 OMITTED

Volume control full on.
Line voltage 117 A.C.
Power consumption 77 watts.
Power output 8.4 watts.

I.F. FREQUENCY 455 KC.
7 TUBE SUPERHETERODYNE
CHASSIS Nº 7A11-3 BAND A.C.-PHONO

MODEL 7S598

SPEAKER 49-441 10"



Tuning Ranges:
540 Kc. to 1570 Kc.
1.55 Mc. to 4.8 Mc.
5.8 Mc. to 18.3 Mc.

SOCKET VOLTAGES

ZENITH RADIO CORP. MODEL 7S598, Chassis 7A11

ALIGNMENT PROCEDURE

Model 7S598

Chassis No. 7A11

Operation	Connect Test Oscillator to	Dummy Antenna	Input Signal Frequency	Band	Set Dial At	Trimmers	Purpose
1	Converter Grid	.5 mfd.	455 Kc.	BC	600 Kc.	A, B, C, D	Align I. F.
2	R. F. Grid	.5 mfd.	455 Kc.	BC	600 Kc.	E	Adj. Wave Trap for Minimum
3	1 Turn Loop Made with Generator Leads to 10" dia. See Note!	—	18 Mc.	SW	18 Mc.	K	Set Oscillator to Scale
4		—	16 Mc.	SW	16 Mc.	M	Align Antenna
5		—	4.5 Mc.	Med.	4.5 Mc.	Q	Rock Gang and Adjust for Max.
6		—	1500 Kc.	BC	1500 Kc.	F	Set Oscillator to Scale
7		—	1400 Kc.	BC	1400 Kc.	G	Align Antenna
8			600 Kc.	BC	600 Kc.	J	Rock Gang and Adjust for Max.
9	Repeat operations 6 - 7 and 3 - 4						

Stage Gains:

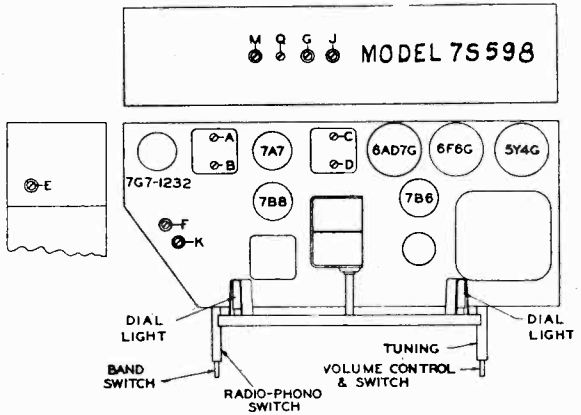
Bc. and 455 Kc. I.F.

Ant. to R.F. grid 3.2× at 1000 Kc.

R.F. grid to conv. grid 8.1× at 1000 Kc.

Conv. grid to I.F. grid 65× at 455 Kc.

Overall audio 1411× at 1 watt, 400 cycles.



TRIMMER LOCATIONS

Models 10H571R, 10H573

Chassis No. 10A3R

Note: Adjust FM I.F. frequency to value designated on I.F. transformer.

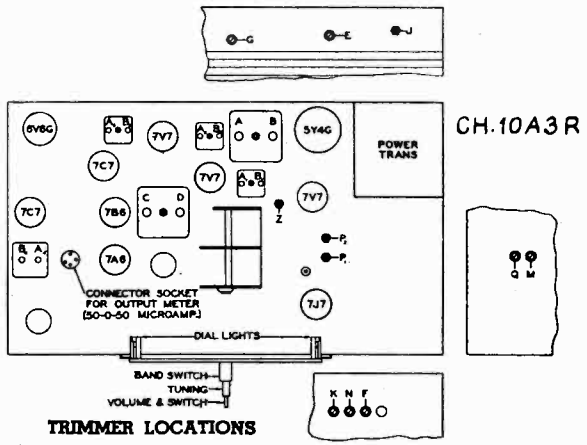
ALIGNMENT PROCEDURE

Opr.	Connect Test Oscillator to	Dummy Antenna	Input Signal Frequency	Band	Set Dial At	Trimmers	Purpose
1	Converter Grid	.5 mfd.	455 Kc.	BC	600 Kc.	A, B, C, D,	Align I. F.
2	R. F. Grid	"	455 Kc.	BC	600 Kc.	E	Adj. Wave Trap for Minimum
3	Antenna Z and G	400 ohms	18 Mc.	SW	18 Mc.	K	Set Oscillator to Scale
4	"	"	16 Mc.	SW	16 Mc.	M	Align Antenna
5	"	"	5.0 Mc.	Med.	5.0 Mc.	N	Set Oscillator to Scale
6	"	"	4.5 Mc.	Med.	4.5 Mc.	Q	Align Antenna
7	1 Turn Loop Made with Generator Leads to 10" dia. See Note!	——	1400 Kc.	BC	1400 Kc.	F	Set Oscillator to Scale
8		——	1400 Kc.	BC	1400 Kc.	G	Align Antenna
9		——	600 Kc.	BC	600 Kc.	J	Rock Gang to Track BC Padder

F. M. ALIGNMENT — See Pages 126-127

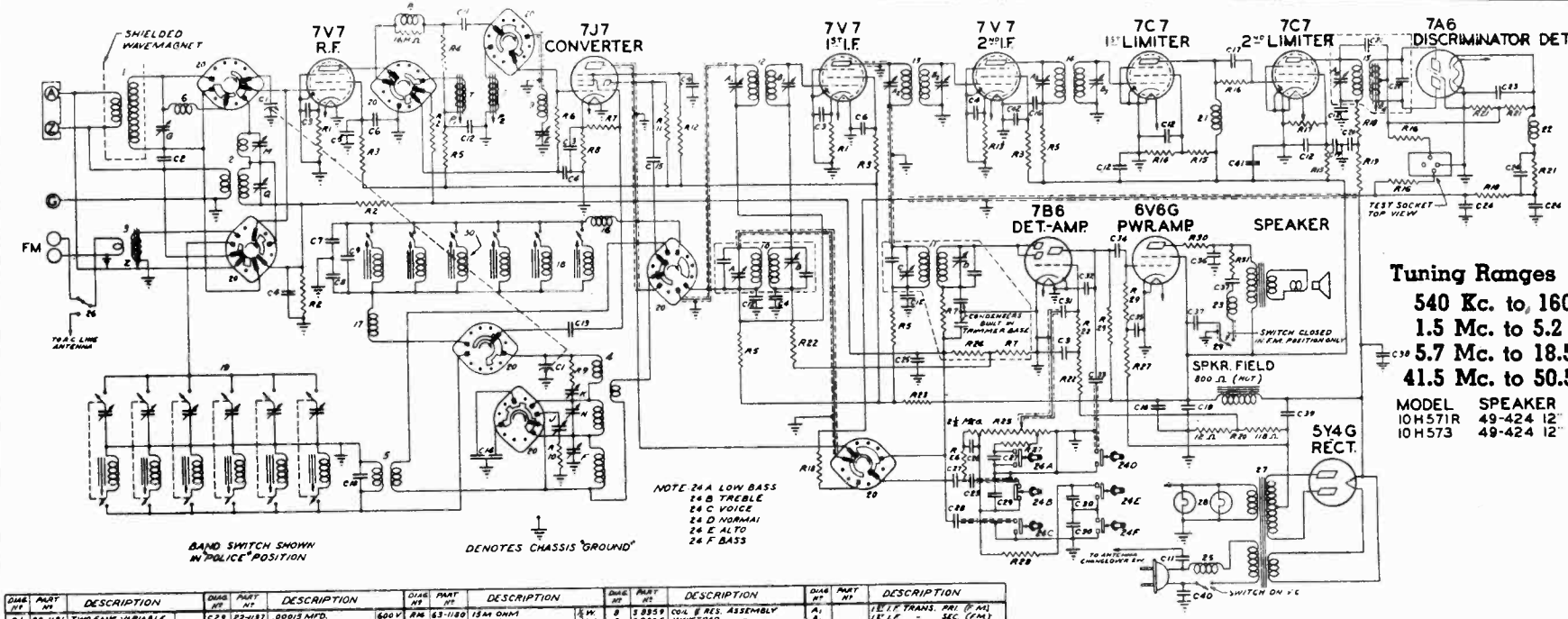
X = FM output meter across full discriminator load. Y = FM output meter across half discriminator load.

10	7V7 2nd I.F. Grid	.5 mfd.	8.8 Mc.	Manual FM	8.8 Mc.	A 4	Align for Maximum deflection—Y
11	"	"	8.8 Mc.	"	8.8 Mc.	B 4	Align for Zero deflection—X
12	"	"	8.8 Mc.	"	8.8 Mc.	A 3 - B 3	Align for Maximum deflection—Y
13	7V7 1st I. F. Grid	"	8.8 Mc.	"	8.8 Mc.	A 2 - B 2	" — Y
14	Converter Grid	"	8.8 Mc.	"	8.8 Mc.	A 1 - B 1	" — Y
15	FM Ant. Terminals	100 ohms	48. Mc.	"	48. Mc.	Adj. Cam on Gang Shaft to Scale Osc.	Align for Zero deflection—X
16	"	"	42.5 Mc.	"	42.5 Mc.	P1	Align for Maximum deflection—Y
17	"	"	49. Mc.	"	49. Mc.	P 2	" — Y
18	"	"	46. Mc.	"	46. Mc.	Z	" — Y



TRIMMER LOCATIONS

ZENITH RADIO CORP. MODELS 10H571R, 10H573 Chassis 10A3R



Tuning Ranges

540 Kc. to 1600 Kc.
1.5 Mc. to 5.2 Mc.
5.7 Mc. to 18.5 Mc.
41.5 Mc. to 50.5 Mc.

MODEL	SPEAKER
10H571R	49-424 12"
10H573	49-424 12"

AMP. MOD. I.F. FREQUENCY 455 KC.
FREQ. MOD. I.F. FREQUENCY 8.6 MC.
10 TUBE SUPERHETERODYNE
CHASSIS Nº 10A3R-A.C.-4 BAND

DIAG. Nº	PART Nº	DESCRIPTION		DIAG. Nº	PART Nº	DESCRIPTION		DIAG. Nº	PART Nº	DESCRIPTION
C1	22-1181	TWO GANG VARIABLE		C29	22-1137	.00015 MFD.	600 V	R16	63-1180	15 M OHM ½ W
C2	22-319	.005 MFD	1000 V	C30	22-1156	.01 MFD.	400 V	R15	63-1155	33 M OHM ½ W
C3	22-827	.1 MFD.	200 V	C31	22-188	.02 MFD.	400 V	R16	63-597	470 M OHM ½ W
C4	22-829	.05 MFD.	200 V	C32	22-1156	.00025 MFD.	600 V	R17	63-607	15 M OHM ½ W
C5	22-1183	5 MFD. ELECTROLYTIC	300 V	C33	22-448	.004 MFD.	600 V	R18	63-583	1000 OHM ½ W
C6	22-243	.01 MFD.	400 V	C34	22-830	.02 MFD.	600 V	R19	63-679	82 M OHM ½ W
C7	22-1166	50 MMFD. COMP.		C35	22-1108	.04 MFD.	200 V	R20	63-1150	2.5 SECTION CANDOHM
C8	22-1133	50 MMFD. COMP.		C36	22-1134	.002 MFD.	1000 V	R21	63-1165	100 M OHM ½ W
C9	22-1193	15 MMFD. CERAMIC		C37	22-1162	.1 MEGOHM	600 V	R22	63-271	1 MEGOHM ½ W
C10	22-848	COMPENSATING COND.		C38	22-1189	.0003 MFD.	1000 V	R23	63-1179	1000 OHM ½ W
C11	22-162	.0001 MFD.	600 V	C39	22-1164	BOARD ELECTROLYTIC	450 V	R24	63-773	180 M OHM ½ W
C12	22-823	.1 MFD.	400 V	C40	22-1041	.005 MFD.	600 V	R25	63-1074	VOLUME CONTROL
C13	22-1149	.5 MMFD.	600 V	C41	22-289	.005 MFD.	600 V	R26	63-701	470 OHM ½ W
C14	22-1039	DUAL PADDER		C42	22-492	.002 MFD.	600 V	R27	63-593	47 M OHM ½ W
C15	22-358	.002 MFD.	600 V					R28	63-594	68 M OHM ½ W
C16	22-828	.05 MFD.	400 V	R1	63-761	150 OHM ½ W		R29	63-296	220 M OHM ½ W
C17	22-187	.68 MMFD.	600 V	R2	63-606	2.2 MEGOHM ½ W		R30	63-1158	100 OHM ½ W
C18		30 MFD. ELECTROLYTIC	450 V	R3	63-151	33 M OHM ½ W		R31	63-156	10 M OHM ½ W
C19	22-1178	5 MFD.	300 V	R4	63-1183	2200 OHM ½ W				
C20		.05 MFD.	250 V	R5	63-605	1000 OHM ½ W				
C21	22-1196	.0008 MFD.	600 V	R6	63-715	100 M OHM ½ W				
C22	22-1163	25 MMFD.	600 V	R7	63-713	47 M OHM ½ W				
C23	22-289	50 MMFD.	600 V	R8	63-1164	300 OHM ½ W				
C24	22-1138	.0006 MFD.	600 V	R9	63-676	68 OHM ½ W				
C25	22-348	.001 MFD.	600 V	R10	63-572	15 OHM ½ W				
C26	22-1130	15 MMFD.	600 V	R11	63-943	6700 OHM ½ W				
C27	22-1127	98 MFD.	400 V	R12	63-1160	8.6 M OHM ½ W				
C28	22-1135	.008 MFD.	600 V	R13	63-946	150 OHM ½ W				

DIAG. Nº	PART Nº	DESCRIPTION
8	3 8859	C64, 8 RES. ASSEMBLY
9	3 8826	WAVETRAP -
10	95-765	1ST I.F. TRANSFORMER (A.M.)
11	95-766	2ND I.F. - (A.M.)
12	95-785	1ST I.F. - (F.M.)
13	95-786	2ND I.F. - (F.M.)
14	95-787	3RD I.F. - (F.M.)
15	95-788	DISCRIMINATOR I.F. TRANS. (F.M.)
16	3 9535	PLATE PEAKING COIL
17	3 9350	GRID -
18		AUTOMATIC TUNING UNIT (F.M.)
19		AUTOMATIC TUNING UNIT (B.C.)
20	85-236	BAND SELECTOR SWITCH
21	3 9483	PLATE CHOKE
22	3 9603	F.M. I.F. WAVETRAP
23	20-250	SPEAKER COMB. FILTER
24	3 8990	TONE CONTROL SW. ASSEM.
25	3 9604	LINE CHOKE
26	85-238	ANTENNA CHANGEOVER SW.
27	95-771 (95-772)	POWER TRANS. (50-60~ 85 W.)
28	100-36	PILOT LIGHT 6.3 V. .25 A.
29	85-273	AUDIO FILTER SWITCH
30	3 9262	MANUAL F.M. OSC. COIL
A		1ST I.F. TRANS. PRI. (F.M.)
B		1ST I.F. - SEC. (A.M.)
C		2ND I.F. - PRI. (F.M.)
D		2ND I.F. - SEC. (A.M.)

DIAG. RT	PART Nº	DESCRIPTION
A1		1ST I.F. TRANS. PRI. (F.M.)
B1		1ST I.F. - SEC. (F.M.)
A2		2ND I.F. - PRI. (F.M.)
B2		2ND I.F. - SEC. (F.M.)
A3		3RD I.F. - PRI. (F.M.)
B3		3RD I.F. - SEC. (F.M.)
A4		DISCRIMINATOR I.F. TRANS. PRI.
B4		DISCRIMINATOR I.F. - SEC.
L	22-1015	WAVETRAP
F		BROADCAST OSC. NOTE 1
G	22-1068	BROADCAST ANTENNA
J	22-686	BROADCAST PADDER
K		SHORT WAVE OSC. NOTE 1
M		SHORT WAVE ANT. NOTE 2
N		POLICE BAND OSC. NOTE 1
R		ULTRA HIGH FREQ. DET. (PLATE)
P		ULTRA HIGH FREQ. DET. (GRID)
Q		POLICE BAND ANT. NOTE 2
Z		ULTRA HIGH FREQ. ANTENNA

NOTE:
(1) TRIMMERS F, K & N ARE MOUNTED ON STRIP 22-850
(2) TRIMMERS M & Q ARE MOUNTED ON STRIP 22-1068

Stage Gains:

Bc. and 455 Kc. I.F.

Ant. to R.F. 6.5× at 1000 Kc.

R.F. grid to conv. grid 28.1× at 1000 Kc.

Conv. grid to I.F. grid 31.3× at 455 Kc.

Overall audio 800× at 1 watt, 400 cycles.

Fm. and 8.6 Mc. I.F.

Ant. to R.F. grid — 1.8× at 46. Mc.

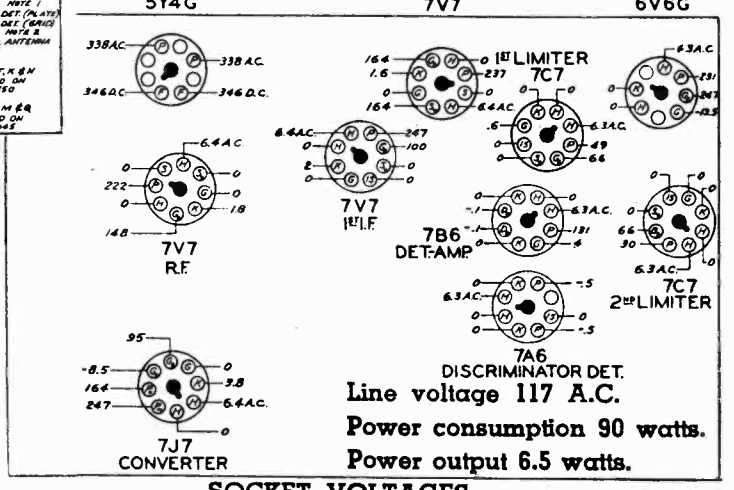
R.F. grid to conv. grid — 7.9× at 46. Mc.

Conv. grid to 1st I.F. grid — 2.7× at 8.6 Mc.

1st I.F. grid to 2nd I.F. grid — 80× at 8.6 Mc.

2nd I.F. grid to Limiter grid — 25× at 8.6 Mc.

SOCKET VOLTAGES



Line voltage 117 A.C.

Power consumption 90 watts.

Power output 6.5 watts.

FREQUENCY MODULATION

Broadcasting by the Frequency Modulation method has already proved to be the most satisfactory means of "Local" radio transmission with reduced noise and high fidelity. It is not generally understood that these two features of FM are due in a great measure to the wide frequency band which this method of modulation employs. The FM receiver must be accurately aligned because much of the FM system's noise reducing ability is lost if the FM IF and discriminator circuits are misaligned.

The alignment of FM receivers differs from the familiar AM receiver alignment procedure where a modulated signal from the generator is used and the output is measured with an A.C. voltmeter across the voice coil.

The signal generator for FM alignment must be capable of supplying an unmodulated signal of at least .5 volt at the IF frequencies (4 to 9 Mc.) and a moderate unmodulated signal at the FM RF frequencies (41.5 to 50.5 Mc.) A 50-0-50 microammeter, such as Triplett #321 or #521, makes an excellent output meter when used with our #S9614 four prong plug and cable assembly and a S.P.D.T. switch. (see fig. 1)

The output meter is connected across HALF the diode load resistor for gain alignment and is connected across the FULL diode load resistor for frequency settings. A polarized socket is provided (near the 7A6 tube) which accommodates the output meter plug to facilitate switching the meter across either FULL or HALF the diode load resistor.

IMPORTANT—The FM IF and discriminator alignment must be followed in a stage-by-stage sequence, beginning at the discriminator and working forward to the converter stage. This differs from the conventional AM IF alignment procedure where the signal is applied to the converter grid and all the IFs are aligned simultaneously.

The signal from the generator must be kept just below the point where the limiter action of the receiver begins. To explain further we should consider the purpose of the limiter. It does what its name implies; it limits the amount of signal applied to the discriminator circuit. When the input signal is strong the limiter cuts off, allowing only a portion of the signal to pass, while at low signal levels the limiter acts as an IF amplifier. Therefore, it is easy to understand why the signal input to the receiver and IFs must be held below the limiter operating range during alignment. The most practical way of determining the proper amount of input signal is to watch the output meter (connected across HALF the diode load) while the signal from the generator is increased. The meter will indicate the increase in signal until limiting action begins, from which point on no appreciable increase can be noted on the meter even though the generator signal has been increased considerably. The desired signal input level (from the generator) is just below the limiting point which may be determined by increasing the generator output while watching the output meter, then reducing the generator output slightly when the limiting point is reached.

IF AND DISCRIMINATOR ALIGNMENT

Holes have been placed at the top of all the FM IF transformer shields so that a signal generator may be connected across the transformer secondaries to facilitate alignment. (see fig. 2) A vey high input signal will be necessary to get an output indication for the discriminator alignment. Should the generator be unable to supply sufficient signal, the Discriminator input stage may be aligned first in order that its gain may be utilized to raise the input signal to the discriminator.

1. Connect the output meter across the FULL discriminator load. (fig. 1)
2. Feed an unmodulated signal, at the IF frequency, through the dummy antenna (fig. 2) to the 3rd IF transformer secondary. (The IF frequency is stamped on the IF transformer shields.) Adjust the slug B4 for resonance. Rotating the slug B4 through the resonance point will cause the output meter to swing through zero from positive to negative or vice versa. A zero reading on the meter indicates the desired resonance point.
3. Switch the output meter to HALF discriminator load (fig. 1). Adjust trimmer A4 for maximum output, keeping the signal input below the point of limiting action.
4. (Meter at HALF load) Connect the generator to the 2nd IF transformer secondary and adjust the 3rd IF trimmers A3 and B3 for maximum output.
5. (Meter at HALF load) Connect the generator across the 1st IF transformer secondary and adjust the 2nd IF transformer trimmers A2 B2 for maximum output.
6. (Meter at HALF load) Connect the generator to the converter grid. A small socket is provided near the converter tube which will accommodate the side pin of the #S9615 Dummy Antenna assembly (fig. 2) to facilitate this generator connection. Adjust the 1st IF transformer trimmers A1 B1 for maximum output.

FM OSCILLATOR AND RF ALIGNMENT

7a. (Meter at FULL load) Connect the generator, through a 100 ohm dummy antenna, to the FM antenna terminals. Set the generator at 50 Mc. and tune in the signal on the receiver. As the pointer passes the 50 Mc. calibration the output meter will swing from negative through zero to a positive reading or vice versa. The resonance point is again at the zero setting. Should the pointer be off calibration more than plus or minus .5 Mc., which is tolerable, the oscillator may be set by adjusting the two flexible green leads between the manual tuning oscillator coil and the band switch. If the pointer is below 50 Mc. it can be raised by bringing the two green leads together and in the same manner the pointer can be lowered by separating the leads.

7b. (Meter still at FULL load) Set the generator at 46 Mc. and check the dial calibration (zero on meter). 46 Mc. should be on scale unless the cam on the condenser shaft has been loosened. If the cam has to be adjusted to scale the oscillator at 46 Mc., the 50 Mc. oscillator adjustment must be repeated. The converter stage is aligned after the receiver has been adjusted to scale within the .5 Mc. limits.

8a. (Meter at FULL load) With generator connected to the FM antenna terminals through 100 ohm dummy, set the generator at 49 Mc. and tune in signal on receiver to get a zero output meter reading. Switch the meter to HALF load and adjust the generator to give an output just below the limiter action point. Adjust slug P1 for maximum output.

8b. (Meter at FULL load) Set generator at 46 Mc. and tune in on receiver. Switch meter to HALF load and adjust "Z" for maximum output.

8c. (Meter at FULL load) Set generator at 42.5 Mc. and tune in on receiver. Switch meter to HALF load and adjust P2 for maximum output.

There are no RF adjustments for the FM push buttons when the push buttons are used on automatic. Button #1 is checked at 50 Mc., buttons #2 and #3 checked at 49 Mc., buttons #5 and #6 checked at 42.5 Mc., and button #4 is the manual switch.

In conclusion we again wish to emphasize the importance of keeping the signal from the generator below the point where limiter action begins, that the output meter is connected across the FULL diode load resistor for frequency and calibration operations, and that the output meter is connected across HALF the diode load resistor for gain checks.

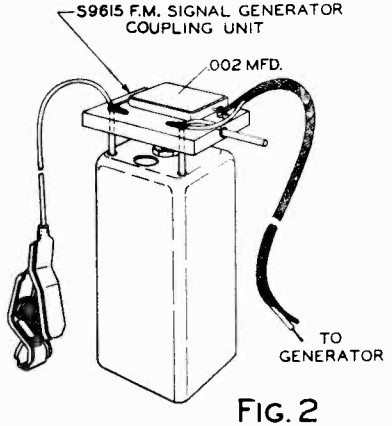


FIG. 2

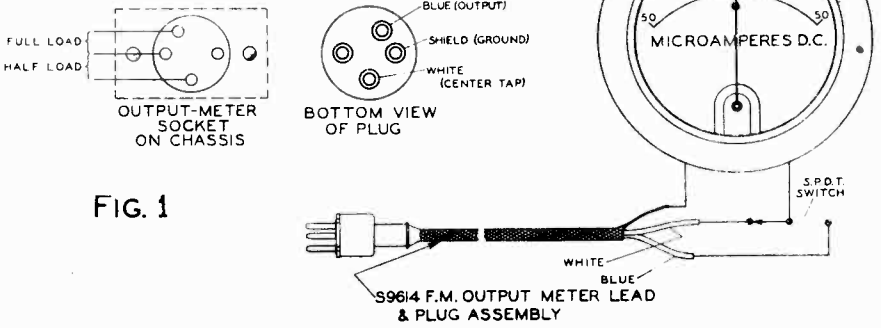
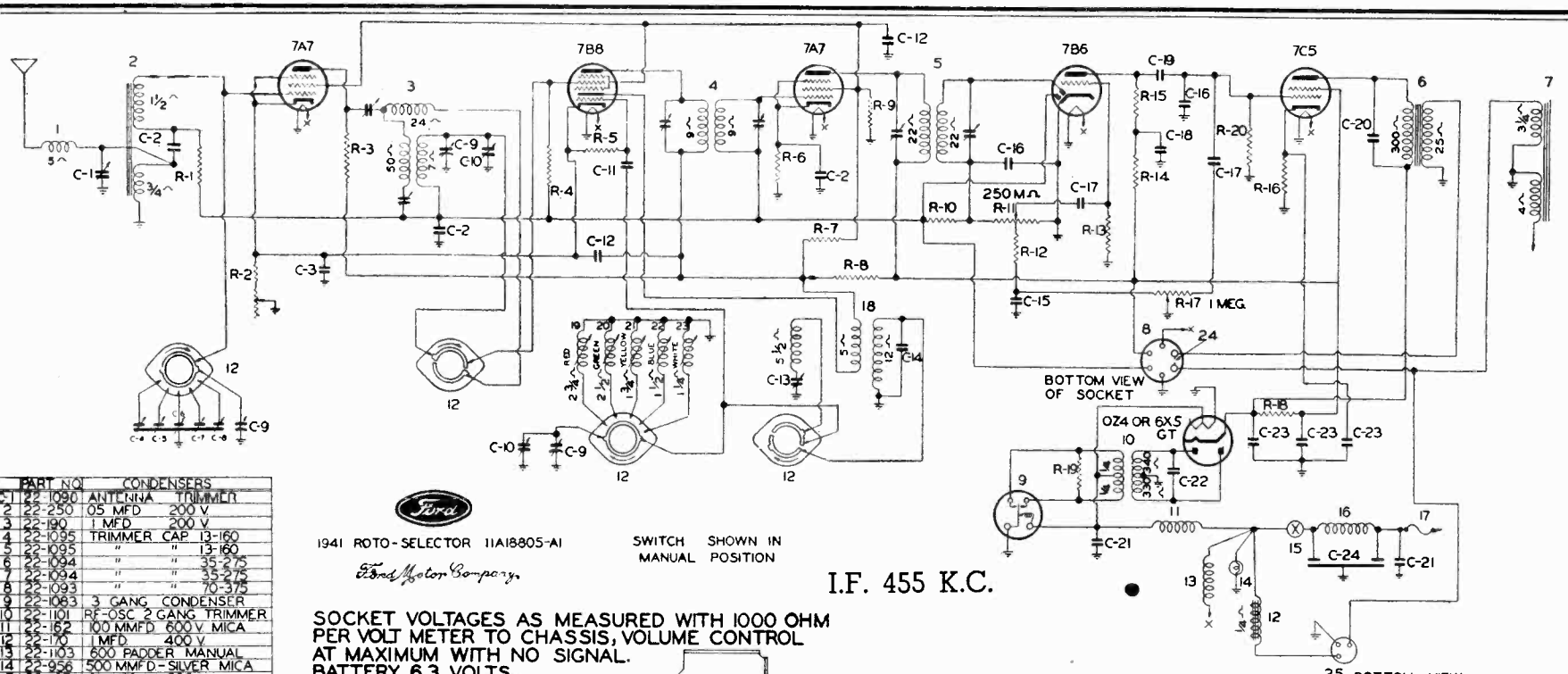


FIG. 1

ZENITH RADIO CORP.

MODELS 6MF590, 6MF591 Chassis 6A21 Ford



Ford

1941 ROTO-SELECTOR 11A18805-A1

Ford Motor Company

SWITCH SHOWN IN MANUAL POSITION

I.F. 455 K.C.

PART NO.		CONDENSERS
C-1	22-1090	ANTENNA TRIMMER
2	22-250	05 MFD 200 V.
3	22-190	1 MFD 200 V.
4	22-1095	TRIMMER CAP 13-160
5	22-1095	" " 13-160
6	22-1094	" " 35-275
7	22-1094	" " 35-275
8	22-1093	" " 70-375
9	22-1083	3 GANG CONDENSER
10	22-1101	RF-OSC 2 GANG TRIMMER
11	22-162	100 MMFD 600 V MICA
12	22-170	1 MFD 400 V
13	22-1103	600 PADDER MANUAL
14	22-956	500 MMFD-SILVER MICA
15	22-185	01 MFD 200 V
16	22-182	250 MFD-600 V MICA
17	22-906	005 MFD 200 V
18	22-212	05 MFD 400 V
19	22-435	02 MFD 600 V
20	22-838	005 MFD 600 V
21	22-908	5 MFD 120 V
22	22-1079	006 MFD 1600 V
23	22-955	10-10-20 MFD 400-350-25 V
24	22-1076	250 MMFD DUAL MICA

	PART NO.	RESISTORS
R-1	63-593	470 M OHMS 1/4 W
2	63-1131	200 TO 800 OHM SENCONT
3	63-311	15 M OHMS 1/4 W
4	63-596	330 M OHMS 1/4 W
5	63-593	47 M OHMS 1/4 W
6	63-634	820 OHMS 1/4 W
7	63-1065	15 M OHMS 1 W
8	63-1135	3900 OHMS 2 W
9	63-592	33 M OHMS 1/4 W
10	63-271	1 MEG OHM 1/4 W
11	63-1133	VOL CONT & SWITCH
12	63-589	10 M OHMS 1/4 W
13	63-604	10 MEG OHM 1/4 W
14	63-595	100 M OHMS 1/4 W
15	63-296	220 M OHMS 1/4 W
16	63-948	330 OHMS 1 W
17	63-1197	TONE CONTROL
18	63-968	1800 OHMS 2 W
19	63-971	220 OHMS 1/2 W
20	63-719	470 M OHMS 1/4 W

SOCKET VOLTAGES AS MEASURED WITH 1000 OHM PER VOLT METER TO CHASSIS, VOLUME CONTROL AT MAXIMUM WITH NO SIGNAL. BATTERY 6.3 VOLTS.

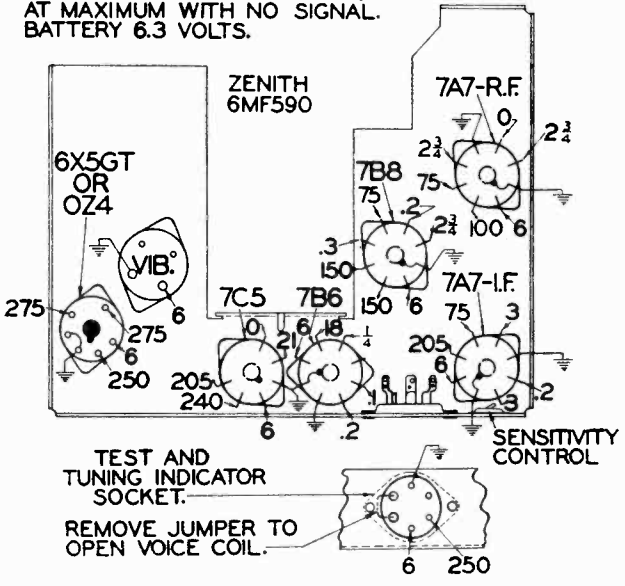


FIG. 1

PART NO.		MISCELLANEOUS
1	S-8819	ANT MOTOR NOISE CHOKE
2	S-8927	ANTENNA COIL
3	S-8988	R.F. TRANSFORMER
4	95-742	1st I.F. "
5	95-743	2nd I.F. "
6	95-744	OUTPUT "
7	49-421	SPEAKER
8	78-284	TUNING EYE SOCKET
9	190-15	NON SYNCHRON VIBRATOR
10	95-745	POWER TRANSFORMER
11	20-213	VIBRATOR HASH CHOKE
12	85-253	AUTO. SELECTOR SWITCH
13	20-228	HEATER LINE CHOKE
14	100-36	DIAL LIGHT MAZDA NO 51
15	63-1133	A LINE SWITCH ON VOL CONT
16	20-229	"A" LINE CHOKE
17	136-12	FUSE
18	S-8928	OSCILLATOR COIL
19	S-8971	OSCILLATOR COIL (AUTOMATIC
20	S-8972	" " "
21	S-8973	" " "
22	S-8974	" " "
23	S-8975	" " "
24	58-92	VOICE COIL JUMPER
25	78-406	SOCKET

Sensitivity—7 Micro-volts at one watt output.

Power Output—4.5 watts measured at the voice coil.

Tuning Range 540-1600 K.C.

Tube Complement—7A7 R.F.; 7B8 Oscillator and Modulator; 7A7 I.F.; 7B6 second detector and A.V.C.; 6X5GT or OZ4 Rectifier. 7C5 Beam power output;

Current Consumption—7 amp.

ALIGNMENT:

The alignment of a receiver is one of the most important functions that a service man performs, and the instructions must be carefully followed.

CAUTION:

Care should be taken while making all adjustments on the receiver to have the volume control turned full on. The intensity of the signal should be reduced only at the signal generator.

The signal for the entire alignment procedure, both I.F. and R.F. is fed through a special Zenith dummy which can be purchased from your Zenith distributor, Part No. S9187. The capacities in the Zenith dummy antenna as shown in Fig. 2 are identical with the Ford antenna.

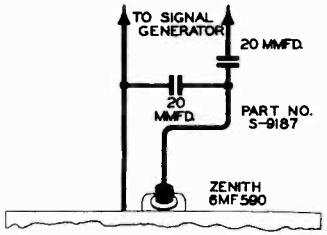


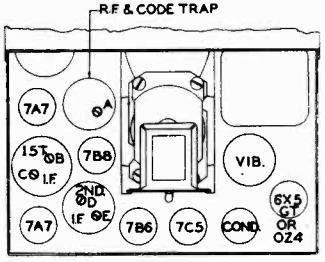
FIG. 2

NOTE:

This receiver is equipped with an adjustable sensitivity control located on the bottom of the chassis as shown in Fig. 1. The control is set at the factory to a position which gives sensitivity of 7 microvolts at 1 watt output. It is found advisable to hold the receiver at this level as any higher sensitivity may result in excessive background noise and unless laboratory equipment is available for measuring sensitivity it is not advisable to change the setting

I.F.—

1. The receiver must be in one of the automatic positions.
2. The signal generator is set at 455 K.C. and fed through the special Zenith dummy to the receiver.
3. The R.F. and code trap adjustment screw A (see Fig. 3) is adjusted for maximum response.



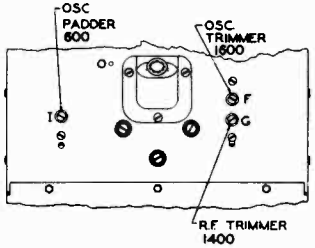
TUBE LAYOUT MODEL 6MF590

FIG. 3

4. The adjustment screws B, C, D and E (see Fig. 3) are then adjusted in order for maximum response.
5. The code trap A is then adjusted for minimum response.

R.F.—

1. The receiver is returned to manual tuning.
2. The tuning control is rotated until the condenser plates are out of mesh (1600 K.C.)
3. The signal generator is set to 1600 K.C.
4. Adjust the 1600 K.C. oscillator trimmer F (see Fig. 4) for maximum response.
5. Set signal generator to 1400 K.C. and rotate the tuning control until a signal is heard.
6. Adjust the R.F. trimmer G (see Fig. 4) and the antenna trimmer H (see Fig. 5) for maximum response.
7. Set the signal generator to 600 K.C. and rotate the tuning control until signal is heard.
8. The condenser gang is then rocked slightly while adjusting the 600 K.C. padder I (see Fig. 4).

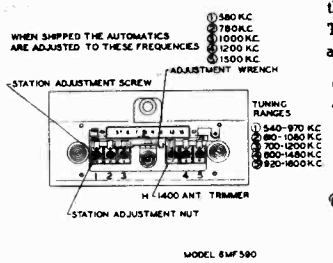


TRIMMER LAYOUT MODEL 6MF590

FIG. 4

SETTING THE ROTO-SELECTOR:

First turn the receiver on, and allow it to operate for approximately half an hour. This is necessary in order that the operating temperature may reach normal, and thereby assure accurate adjustment. After the set has been on for the necessary length of time, remove the plastic escutcheon over the tuning control by first pulling off the three knobs and removing the lock nuts on the tuning and volume control shafts. With the escutcheon removed, the automatic adjusting screws become accessible as shown in Fig. 5. The adjustments are made by means of a special wrench held in position by a clip as shown in Fig. 5 and using this wrench, the adjustments are made as follows:



MODEL 6MF590

FIG. 5

1. Select a station within the range of adjustment No. 1 (Fig. 5). The range of the adjustments is shown in Fig. 5.
2. Set Roto-Selector in position No. 1.
3. Adjust the No. 1 screw (see Fig. 5) with wrench provided until the desired station is tuned to the loudest point.
4. Adjust No. 1 nut (see Fig. 5) for maximum signal.
5. Repeat the last two above operations to make sure the adjustments are accurate.
6. The same procedure is followed in setting the remaining four adjustments selecting a station within the tuning range of each adjusting screw and placing the selector switch in the corresponding position for each adjusting screw.

The station adjusting eye can be used to great advantage in setting the stations. This eye will enable you to get an accurate setting regardless of signal strength.

The eye may also be used when aligning the receiver instead of an output meter. The eye with a special cable and plug is available at your Zenith distributor.

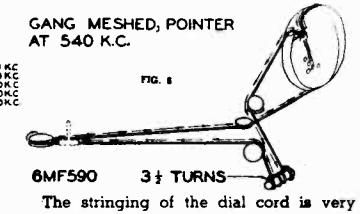


FIG. 6

The stringing of the dial cord is very important for unless properly strung the cord will jump off the pulleys. Figure 6 shows the proper way to string the cord.

The jumper shown on the test socket in Fig. 1 is provided so that an output meter may be connected to the voice coil side of the output transformer.

If you have the type of output meter which is usually connected to the plate of the output tube, it may be adapted for this type of connection by following the instructions shown in Fig. 7.

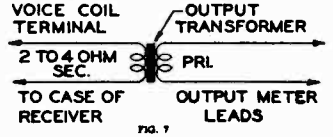
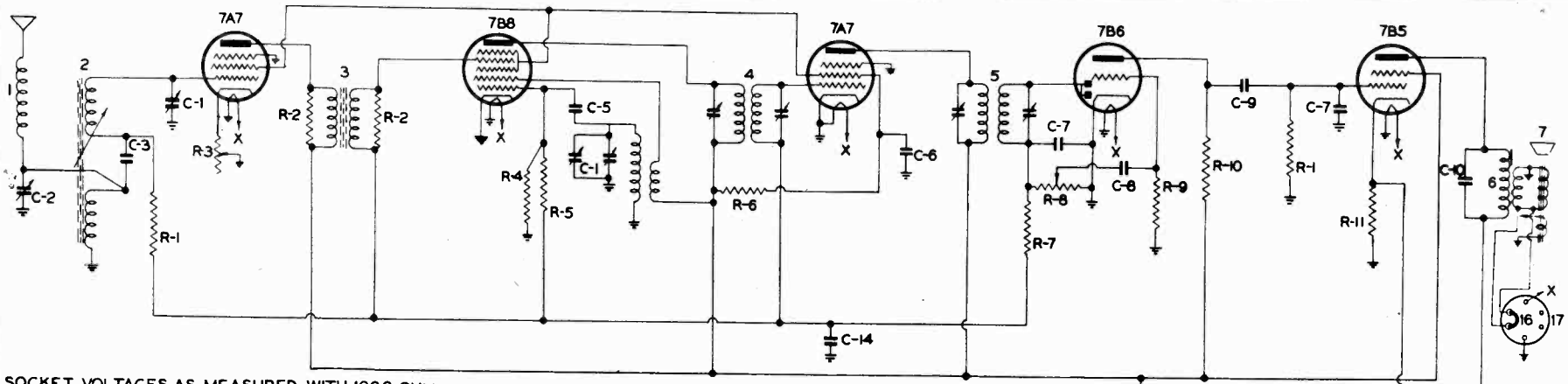
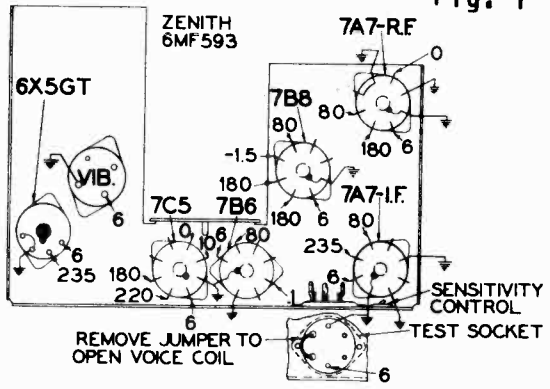


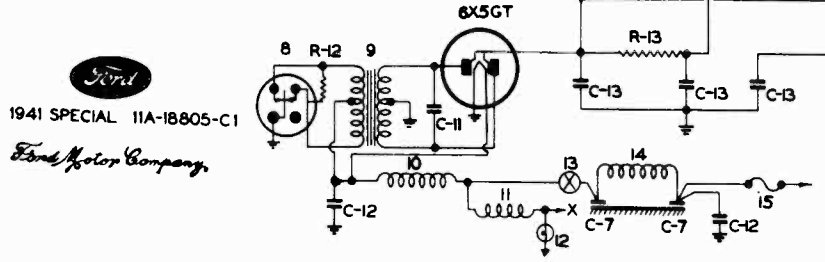
FIG. 7



SOCKET VOLTAGES AS MEASURED WITH 1000 OHM PER VOLT METER TO CHASSIS, VOLUME CONTROL AT MAXIMUM WITH NO SIGNAL. BATTERY 6.3 VOLTS.

Fig. 1





1941 SPECIAL 11A-18805-C1

Ford Motor Company

I.F. 455 K.C.

TUBE COMPLEMENT

7A7 R.F.

7B8 Oscillator and Modulator;

7A7 I.F.;

7B6 Second Detector and A.V.C.;

7B5 Pentode power output;

6X5GT Rectifier.

CURRENT CONSUMPTION - 6 amp. **TUNING RANGE 540** - 1600 K.C.

	PART NO.	CONDENSERS		PART NO	RESISTORS	
C-1	22-1172	2 GANG VARIABLE COND.	R-1	63-597	470 M. OHMS	1/4 W
C-2	22-1177	ANTENNA TRIMMER	R-2	63-588	6800 OHMS	1/4 W
C-3	22-250	.05 MFD 400 V.	R-3	63-1148	SENSITIVITY CONTROL	
C-4			R-4	63-595	100 M. OHMS	1/4 W
C-5	22-289	50 MMFD MICA	R-5	63-673	8.2 MEG. OHM	1/4 W
C-6	22-170	1 MFD 400 V.	R-6	63-958	22 M OHMS	1 W
C-7	22-1076	250-250 DUAL MICA	R-7	63-271	1 MEG OHM	1/4 W
C-8	22-906	.005 MFD 200 V	R-8	63-1177	250 M OHMS VOL. CONT.	
C-9	22-435	.02 MFD 600 V	R-9	63-604	10 MEG OHM	1/4 W
C-10	22-1170	.01 MFD 600 V	R-10	63-296	220 M OHMS	1/4 W
C-11	22-1171	.012 MFD 1600 V	R-11	63-941	390 OHMS	1 W
C-12	22-908	5 MFD 120 V	R-12	63-971	220 OHMS	1/2 W
C-13	22-1179	10-10-20MMFD 350-300-25 V	R-13	63-1170	1500 OHMS	2 W
C-14	22-1115	.05 MFD 200 V				

	PART NO	DESCRIPTION
1	S-8819	ANT MOTOR NOISE CHOKE
2	S-9371	ANTENNA COIL
3	S-9391	R.F. COIL
4	95-789	1st I.F. TRANSFOMER
5	95-784	2nd I.F. "
6	49-434	OUTPUT "
7	49-434	SPEAKER
8	190-15	VIBRATOR
9	95-782	POWER TRANSFORMER
10	20-213	HASH CHOKE
11	20-233	HEATER LINE CHOKE
12	100-32	DIAL LIGHT
13	83-1177	SWITCH ON VOL CONTROL
14	20-229	MOTOR NOISE CHOKE
15	136-11	FUSE
16	58-92	VOICE COIL JUMPER
17	78-248	TEST SOCKET

SENSITIVITY - 9 microvolts at one watt output.

POWER OUTPUT - 3 watts measured at the voice coil.

ALIGNMENT:

The alignment of a receiver is one of the most important functions that a service man performs, and the instructions must be carefully followed.

CAUTION:

Care should be taken while making all adjustments on the receiver to have the volume control turned full on. The intensity of the signal should be reduced only at the signal generator.

The signal for the entire alignment procedure, both I.F. and R.F. is fed through a special Zenith dummy which can be purchased from your Zenith distributor, Part NO. S9187. The capacities in the Zenith dummy antenna as shown in Fig. 2 are identical with the Ford antenna.

NOTE.

This receiver is equipped with an adjustable sensitivity control located on the bottom of the chassis as shown in Fig. 1. The control is set at the factory to a position which gives sensitivity of 9 microvolts at 1 watt output. It is found advisable to hold the receiver at this level as any higher sensitivity may result in excessive background noise and unless laboratory equipment is available for measuring sensitivity it is not advisable to change the setting.

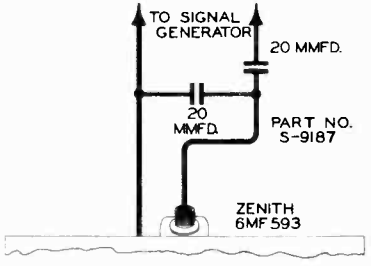
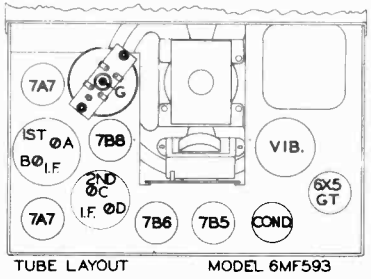


Fig. 2

I.F. —

1. The tuning control is rotated until the condenser plates are fully meshed. (540 K.C.)



TUBE LAYOUT MODEL 6MF593

Fig. 3

2. The signal generator is set at 455 K.C. and fed through the special Zenith dummy to the receiver.

3. The adjustment screws A, B, C and D (see Fig. 3) are then adjusted in order for maximum response.

R.F. —

1. The tuning control is rotated until the condenser plates are out of mesh. (1600 K.C.)

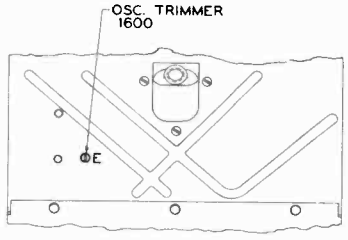
2. The signal generator is set to 1600 K.C.

3. Adjust the 1600 K.C. oscillator trimmer E (see Fig. 4) for maximum response

4. Set signal generator to 1400 K.C. and rotate the tuning control until a signal is heard.

5. Adjust the 1400 antenna trimmer F (see Fig. 5) for maximum response.

6. Set the signal generator to 600 K.C. and rotate the tuning control until the signal is heard.



TRIMMER LAYOUT MODEL 6MF593

Fig. 4

7. The condenser gang is then rocked slightly while adjusting the 600 K.C. core G (see Fig. 3)

8. Repeat operations 4 and 5.

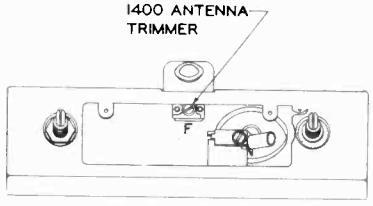
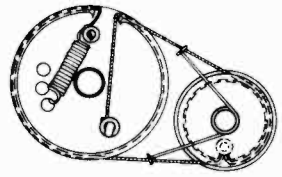


Fig. 5

The stringing of the cord is very important. Figure 6 shows the proper way to string the dial cord.

GANG MESHED, DIAL AT 540 K.C.



6MF593

Fig. 6

The Zenith Radio Corporation furnishes the antenna for 1941 Ford and Mercury only.

Parts for this antenna will be available at your Zenith distributor.

The jumper shown on the test socket in Fig. 1 is provided so that an output meter may be connected to the voice coil side of the output transformer.

If you have the type of output meter which is usually connected to the plate of the output tube, it may be adapted for this type of connection by following the instructions shown in Fig. 7.

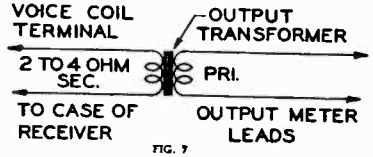


FIG. 7

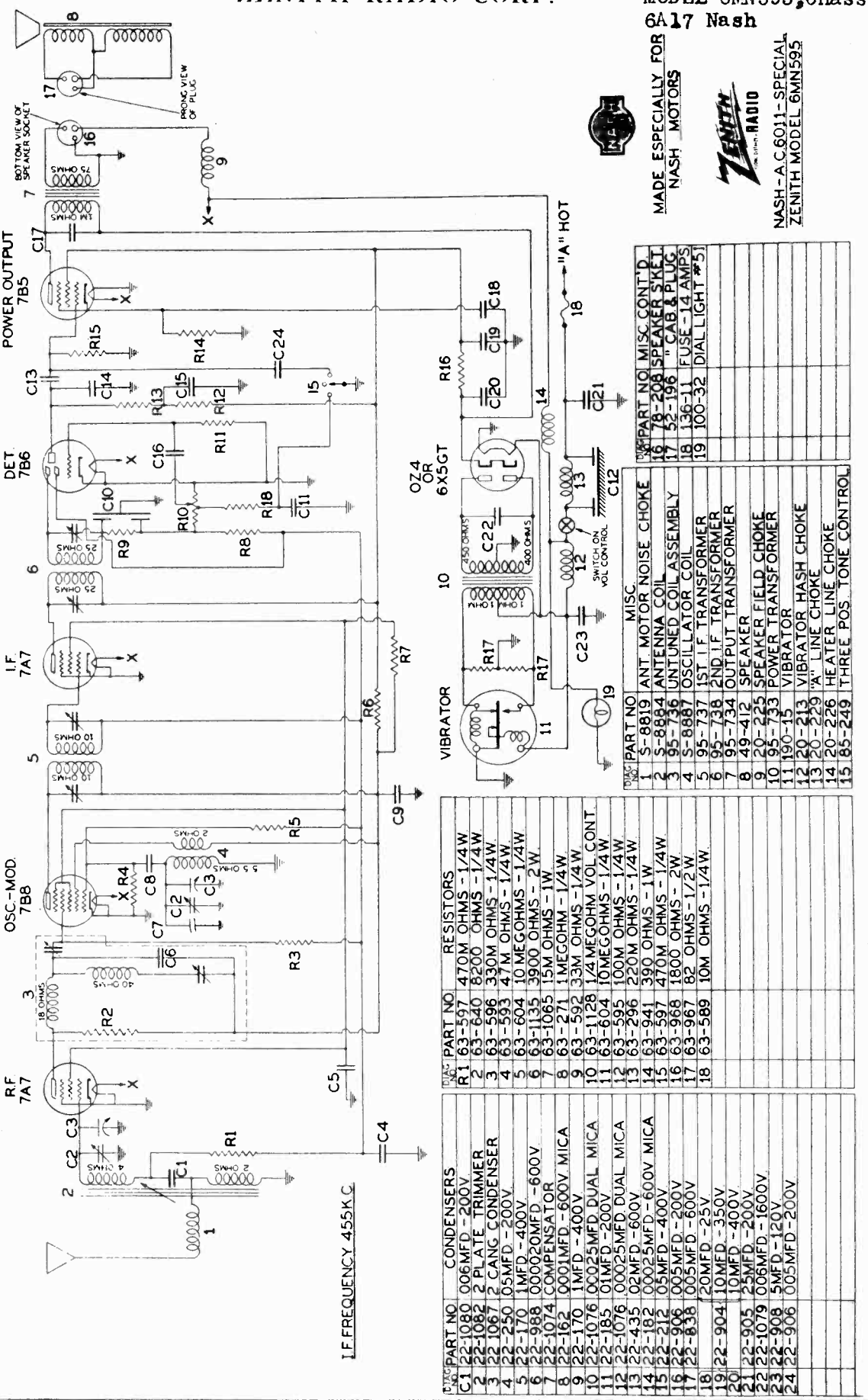
ZENITH RADIO CORP.

MODEL 6MN595, Chassis 6A17 Nash

MADE ESPECIALLY FOR NASH MOTORS

NASH-A.C.6011-SPECIAL ZENITH MODEL 6MN595

NASH AC6011 SPECIAL ZENITH MODEL 6MN595



DIAG. NO.	PART NO.	CONDENSERS
C1	22-1080	006MFD - 200V
2	22-1082	2 PLATE TRIMMER
3	22-1067	2 GANG CONDENSER
4	22-250	05MFD - 200V
5	22-170	1MFD - 400V
6	22-988	00002OMFD - 600V
7	22-1074	COMPENSATOR
8	22-162	0001MFD - 600V MICA
9	22-170	1MFD - 400V
10	22-1076	0025MFD DUAL MICA
11	22-185	01MFD - 200V
12	22-1076	00025MFD DUAL MICA
13	22-435	02MFD - 600V
14	22-182	00025MFD - 600V MICA
15	22-212	05MFD - 400V
16	22-906	005MFD - 200V
17	22-838	005MFD - 600V
18		20MFD - 25V
19	22-904	10MFD - 350V
20		10MFD - 400V
21	22-905	25MFD - 200V
23	22-908	5MFD - 120V
22	22-1079	006MFD - 1600V
24	22-906	005MFD - 200V

DIAG. NO.	PART NO.	RESISTORS
R1	63-597	470M OHMS - 1/4W
2	63-640	8200 OHMS - 1/4W
3	63-596	330M OHMS - 1/4W
4	63-593	47M OHMS - 1/4W
5	63-604	10 MEGOHMS - 1/4W
6	63-1135	3900 OHMS - 2W
7	63-1065	15M OHMS - 1W
8	63-271	1MEGOHM - 1/4W
9	63-592	33M OHMS - 1/4W
10	63-1128	1/4 MEGOHM VOL CONT
11	63-604	10MEGOHMS - 1/4W
12	63-595	100M OHMS - 1/4W
13	63-296	220M OHMS - 1/4W
14	63-941	390 OHMS - 1W
15	63-597	470M OHMS - 1/4W
16	63-968	1800 OHMS - 2W
17	63-967	82 OHMS - 1/2W
18	63-589	10M OHMS - 1/4W

DIAG. NO.	PART NO.	MISC.
1	S-8819	ANT. MOTOR NOISE CHOKE
2	S-8884	ANTENNA COIL
3	95-736	UNTUNED COIL ASSEMBLY
4	S-8887	OSCILLATOR COIL
5	95-737	1ST I.F. TRANSFORMER
6	95-738	2ND I.F. TRANSFORMER
7	95-734	OUTPUT TRANSFORMER
8	49-412	SPEAKER
9	20-225	SPEAKER FIELD CHOKE
10	95-733	POWER TRANSFORMER
11	190-15	VIBRATOR
12	20-213	VIBRATOR HASH CHOKE
13	20-229	"A" LINE CHOKE
14	20-226	HEATER LINE CHOKE
15	85-249	THREE POS. TONE CONTROL

DIAG. NO.	PART NO.	MISC. CONT'D.
16	78-208	SPEAKER S'KET
17	52-196	" CAB. & PLUG
18	136-11	FUSE-14 AMPS
19	100-32	DIAL LIGHT #51

Zenith Model 6MN595 Zenith Model 7MN596
Nash A.C. 6011 Special Nash A.C. 6001 De Luxe

Tuning Range: 540 to 1600 K.C.

Sensitivity: 8 microvolts at 1 watt output.

The cover on both receivers may be removed to check tubes and vibrator without removing the set from the car.

SOCKET VOLTAGES

Figs. 1 and 2 show approximate voltages at the socket terminals.

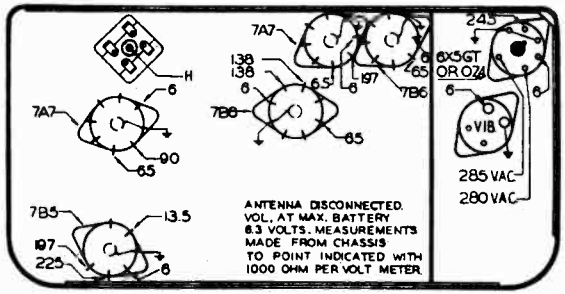


Fig. 1.

NASH AC 6011 SPECIAL
ZENITH 6MN 595

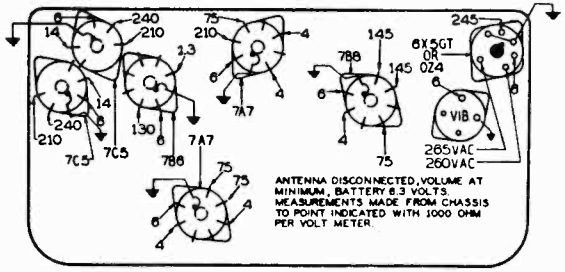


Fig. 2.

NASH AC 6001 DELUXE
ZENITH 7MN 596

SETTING THE SUPER-MATIC TUNING MODEL 6MN595

Adjustment should not be made until receiver has warmed up 15 minutes.

(A) Select a desired station at right side of dial scale.

(B) Loosen screw on right hand push button bar. (See Fig. 4)

(C) Push Super-Matic button bar in as far as possible and tighten screw while bar is in this position.

(D) Repeat the above for remaining bars, choosing three other desired stations.

(E) Insert push buttons on push button bars.

6MN595 AC 6011 SPECIAL

I.F.: The tuning condenser is fully meshed (540 K.C.) The signal generator is set at 455 K.C. and fed through the special Zenith antenna dummy to the receiver. The wave trap adjustment screw A, (see Fig. 3) is adjusted for maximum response. The adjusting screws B, C, D and E (see Fig. 3) are then adjusted in order for maximum response on the output meter. The wave trap A is then adjusted for minimum response.

R.F.: The tuning control is rotated until the condenser plates are completely out of mesh (1600 K.C.) Set the signal generator to 1600 K.C. Adjust the 1600 K.C. osc. trimmer F shown in Fig. 3 for maximum response.

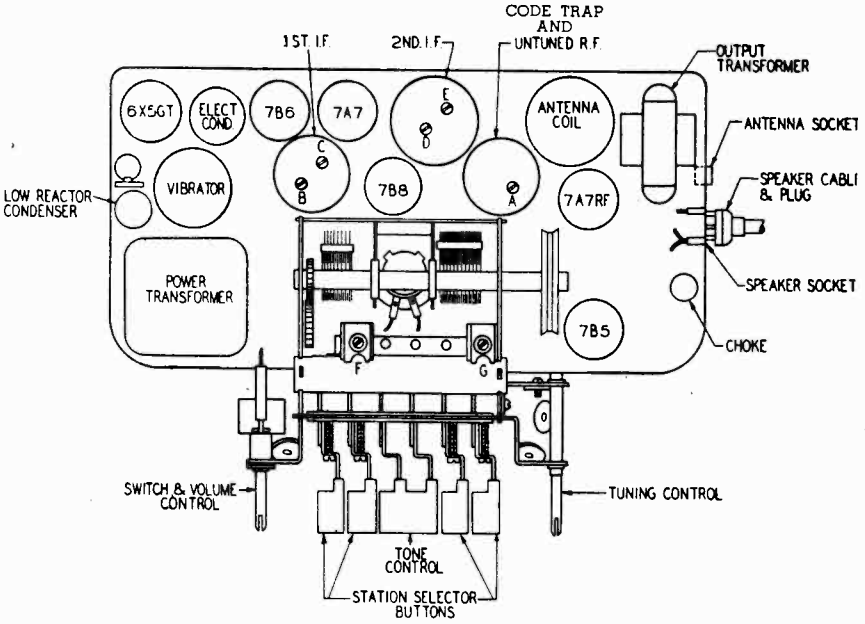


Fig. 3.

NASH AC 6011 SPECIAL
ZENITH 6MN 595

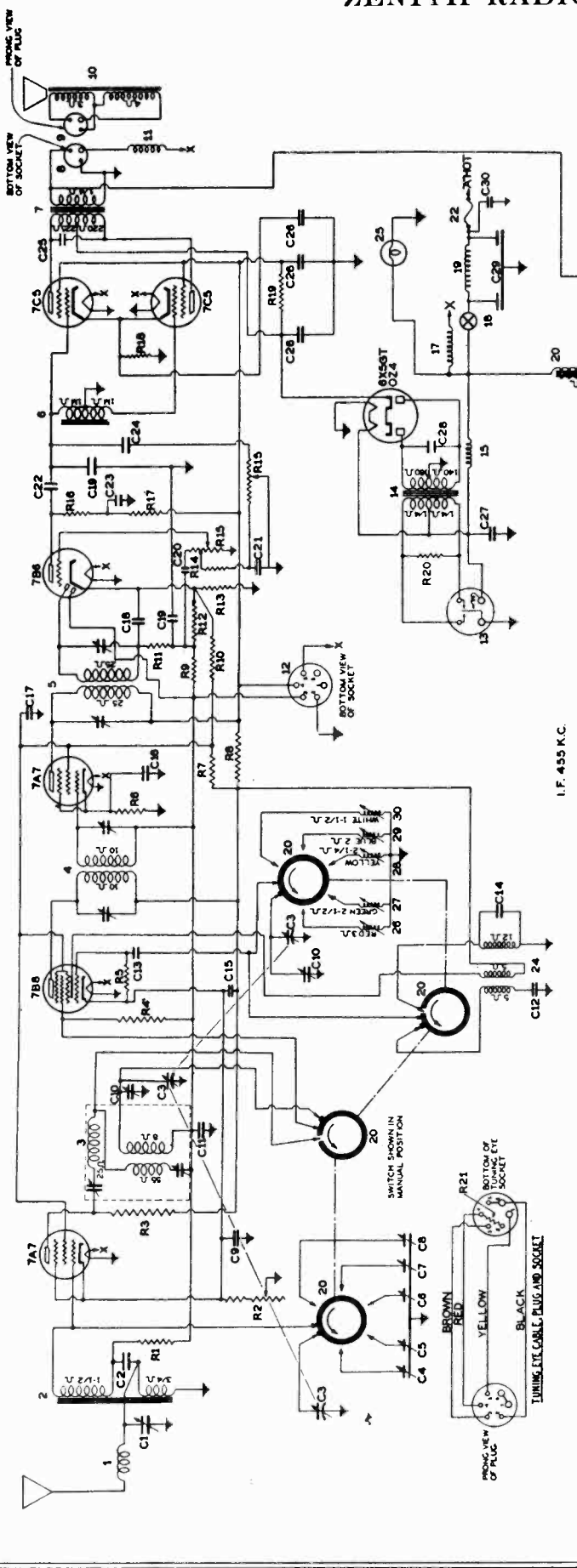
Set the signal generator to 1400 K.C. Rotate the tuning control until the signal is heard and adjust the 1400 antenna trimmer G (See Fig. 3) for maximum response.

Reset the signal generator to 600 K.C. and rotate the tuning control until a signal is heard. and adjust the core H (See Fig. 1) in the antenna coil for maximum response.

If core H is found to be off a great deal, the 1400 antenna trimmer G should be readjusted.

ZENITH RADIO CORP.

MODEL 7MN596, Chassis 7A08 Nash



NASH-A.C.6001-DELUXE
ZENITH SAFETY FOOT CONTROL MODEL-7MN596

MADE ESPECIALLY FOR NASH MOTORS

NASH—A.C.6001—

DELUXE ZENITH SAFETY FOOT CONTROL MODEL—7MN596

DESC	PART NO	CONDENSERS
C1	22-1114	ANTENNA TRIMMER
C2	22-1115	05 MFD - 200V
C3	22-1085	3 GANG CONDENSER
C4	22-1083	TRIMMER CAP 70-375
C5	22-1084	" " 35-215
C6	22-1094	" " 35-215
C7	22-1095	" " 13-160
C8	22-1096	" " 13-160
C9	22-1190	1 MFD - 200V
C10	22-1102	R.F. & OSC. 2 GANG TRIMMER
C11	22-1250	05 MFD - 200V
C12	22-1077	600 PADDER-MANUAL
C13	22-1162	100MMFD-600V MICA
C14	22-1056	500MMFD SILVER MICA
C15	22-1270	1MFD-400V
C16	22-1210	05 MFD - 200V
C17	22-1211	1 MFD - 400V
C18	22-1076	250MMFD-600V MICA
C19	22-1076	250MMFD DUAL MICA
C20	22-1185	01 MFD - 200V
C21	22-1206	005MFD - 200V
C22	22-1435	02 MFD - 600V
C23	22-1212	05 MFD - 400V
C24	22-1075	007MFD - 200V
C25	22-1838	250MFD - 600V
C26	22-1217	20-10-20MFD-450-400-25V
C27	22-1908	5MFD - 120V
C28	22-1116	007MFD-1600V
C29	22-1076	250MMFD DUAL MICA
C30	3022-905	25MFD-20V

DESC	PART NO	RESISTORS
R1	63-719	470M OHMS 1/4W
R2	63-1131	200 TO 800 OHMS SEN. CONT.
R3	63-301	15M OHMS 1/4W
R4	63-596	330M OHMS 1/4W
R5	63-713	4.7M OHMS 1/4W
R6	63-634	820 OHMS 1/4W
R7	63-1065	15M OHMS 1 W
R8	63-1140	4700 OHMS 2 W
R9	63-271	1 MEGOHM 1/4W
R10	63-647	3.3M OHMS 1/4W
R11	63-713	4.7M OHMS 1/4W
R12	63-296	220M OHMS 1/4W
R13	63-580	470 OHMS 1/4W
R14	63-972	3.3M OHMS 1/4W
R15	63-1146	VOL CONT-TONE CONT & SW.
R16	63-1129	56M OHMS 1/4W
R17	63-649	56M OHMS 1/4W
R18	63-948	330 OHMS 1 W
R19	63-968	1800 OHMS 2 W
R20	63-971	220 OHMS 1/2W
R21		1/2 MEGOHM 1/4W

DESC	PART NO	MISCELLANEOUS
1	S-8819	ANTENNA MOTOR NOISE CHOKE
2	S-8927	ANTENNA COIL
3	S-8976	R.F. TRANSFORMER
4	S-8975	1ST I.F. TRANSFORMER
5	S-8974	2ND I.F. TRANSFORMER
6	95-735	AUDIO INPUT TRANSFORMER
7	95-735	AUDIO OUTPUT TRANSFORMER
8	78-209	SPEAKER SOCKET
9	52-196	SPEAKER CABLE & PLUG
10	49-413	SPEAKER
11	20-231	SPEAKER FIELD CHOKE
12	78-284	TUNING EYE SOCKET
13	90-15	NON-SYNCHRONOUS VIBRATOR
14	90-731	POWER TRANSFORMER
15	20-213	VIBRATOR HASH CHOKE
16	S-9172	MANUAL SELECTOR SWITCH
17	20-232	HEATER LINE CHOKE
18		"A" LINE SWITCH-ON VOLUME CONTROL
19	20-229	"A" LINE CHOKE
20	85-252	AUTOMATIC SELECTOR SOLENOID
21	78-406	SAFETY FOOT CONTROL SOCKET
22	136-12	FUSE - 20 AMPERES
23	85-264	SAFETY FOOT CONTROL SWITCH
24	S-9162	OSCILLATOR COIL
25	100-32	DIAL LIGHT - MAZDA NO. 51
26	S-8971	AUTOMATIC OSCILLATOR COIL
27	S-8972	AUTOMATIC OSCILLATOR COIL
28	S-8973	AUTOMATIC OSCILLATOR COIL
29	S-8974	AUTOMATIC OSCILLATOR COIL
30	S-8975	AUTOMATIC OSCILLATOR COIL

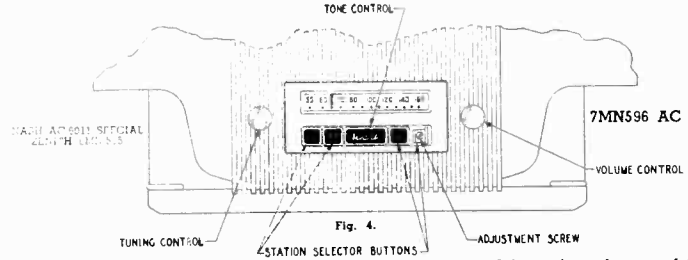


Fig. 4.

NOTE: This receiver is equipped with an adjustable sensitivity control located on the top of the chassis as shown in Fig. 5. The control is set at the factory to a position which gives sensitivity of 8 microvolts at 1 watt output. It is found advisable to hold the receiver at this level as any higher sensitivity may result in excessive background noise and unless laboratory equipment is available for measuring sensitivity, it is not advisable to change this setting.

I.F.: The receiver must be in one of the automatic positions. The signal generator is set at 455 K.C. and fed through the special Zenith antenna dummy to the receiver. The code trap adjustment screw A (see Fig. 5) is adjusted for maximum response. The adjustment screws B, C, D and E are then adjusted in order for maximum response on the output meter (See Fig. 5). The code trap A is then adjusted for minimum response.

R.F.: The receiver is returned to manual and the tuning control is rotated until the condenser plates are out of mesh (1600 K.C.) Set the signal generator to 1600 K.C. and adjust the 1600 K.C. osc. trimmer F (See Fig. 5) for maximum response.

Set the signal generator to 1400 K.C. and rotate the tuning control until a signal is heard and adjust the R.F. trimmer G and antenna trimmer H (See Fig. 5) for maximum response.

Set the signal generator to 600 K.C. and rotate the tuning control until the signal is heard. The condenser gang is then rocked slightly while adjusting the 600 K.C. padder I (See Fig. 5) to maximum reading on output meter.

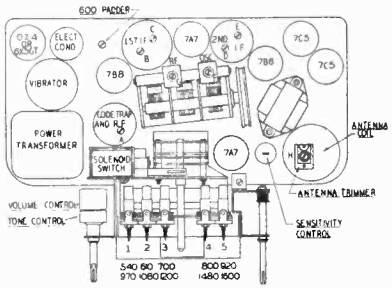


Fig. 5.
NASH AC 6001 DELUXE
ZENITH 7MN 596

IMPORTANT — Unless certain dummy antenna capacities are employed with either the signal generator, or in making the adjustments on stations, a receiver will not respond properly. The capacities provided in the Zenith dummy antenna part No. S7694 shown in Fig. 6 are identical with the conditions found in the Nash car, and if adjusted accordingly, the instrument will operate properly when reinstalled in the automobile. The Zenith dummy antenna is especially priced very low, and should be purchased at once for use in servicing the Zenith built Nash receiver.

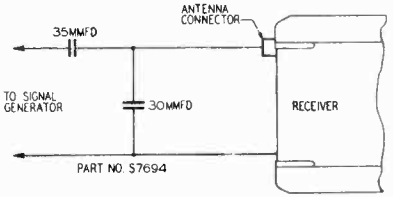
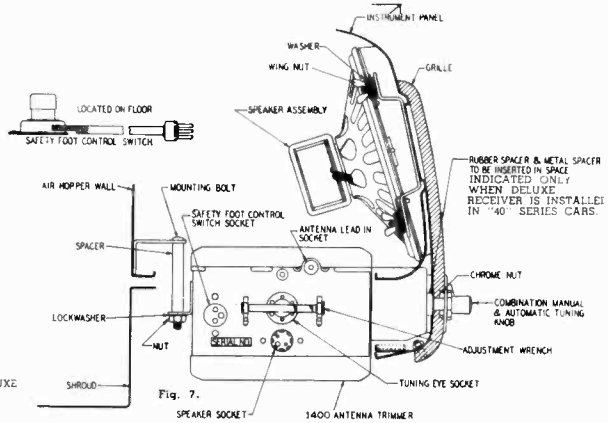


Fig. 6.
NASH AC 6011 SPECIAL
ZENITH 6MN 595
NASH AC 6001 DELUXE
ZENITH 7MN 596

SETTING THE SAFETY AUTOMATIC ELECTRIC TUNING

(A) The automatic station adjusting eye is plugged into the socket on the receiver. (See Fig. 7)



NASH AC 6001 DELUXE
ZENITH 7MN 596
Fig. 7.

(B) The indicator window is removed from the receiver by inserting a small screw driver underneath the left edge of the indicator window and pressing outward. This makes the adjustment screws available.

The set should be turned on and allowed to warm up at least half an hour.

(C) The range for each adjustment is located underneath the adjustment number.

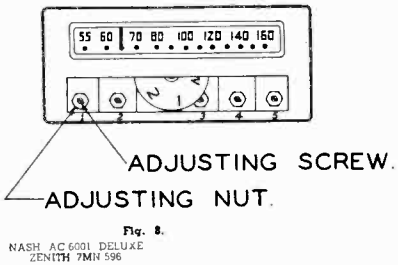


Fig. 8.
NASH AC 6001 DELUXE
ZENITH 7MN 596

A station close to 580 K.C. is set by having the figure 1 so it would appear in indicator window. The adjustment screw No. 1 (See Fig. 8) is then adjusted to the proper signal until the tuning eye gap can not be decreased in size. The No. 1 nut (See Fig. 8) is then adjusted until the gap on the tuning eye cannot be further decreased in size. A wrench for making these adjustments is located on the side of the receiver. (See Fig. 7)

(D) For stations 2, 3, etc. on the Safety Automatic Electric Tuner you set the adjustment screws and nuts the same as for station 1.

The Safety Automatic Station Adjusting Eye is available at all Zenith distributors.

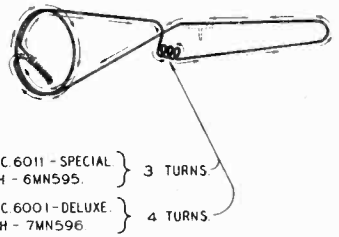


Fig. 9.

The stringing of the dial cord is very important for unless properly strung the cord will jump off the pulleys. Figure 9 shows the proper way to string the cords on both receivers.

ZENITH RADIO CORP.

MODEL 7ML592, Chassis 7A09 Lincoln

Sensitivity—6 microvolts at one watt output. **Power Output**—6 watts measured at the voice coil. **Tuning Range**—540 to 1600 K.C. **Speaker**—full size electrodynamic. **I.F.**—455 K.C. **Roto-Selector tuning** with foot control switch—Selection of any five desired stations automatically by using the foot control or Roto-Selector on instrument panel.

Tube Complement—7A7 R.F. — 7B8 oscillator and modulator — 7A7 I.F. — 7B6 2nd detector and A.V.C. — two 7C5 beam power push pull output — 6X5GT or 0Z4 rectifier — **Current consumption** 8 amperes.

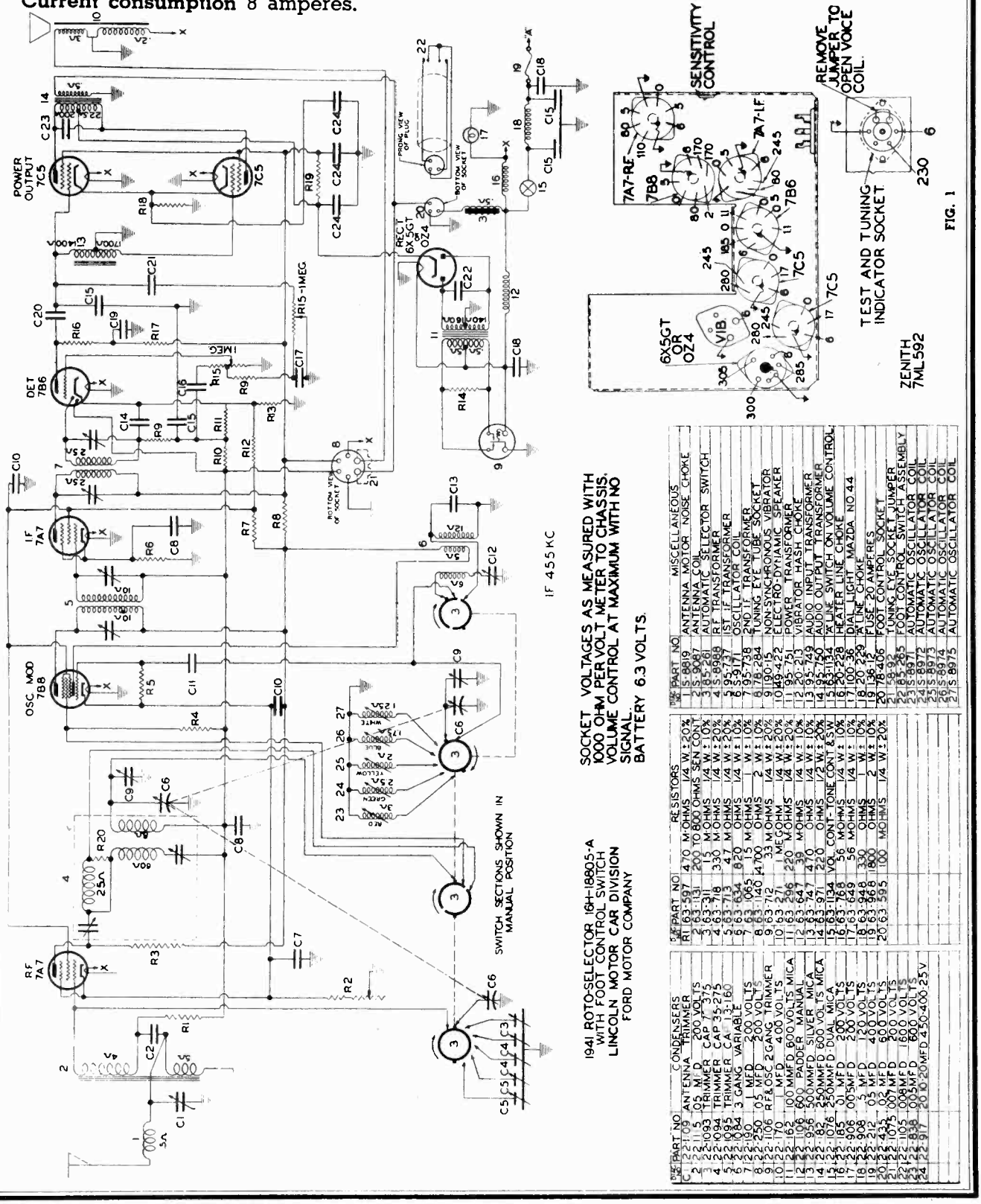


FIG. 1

No.	PART NO	CONDENSERS
C	2221109	ANTENNA TRIMMER
2	2221115	.05 MFD 200 VOLTS
3	2222093	TRIMMER CAP 7-315
4	2222094	TRIMMER CAP 35-275
5	2222095	TRIMMER CA-13-160
6	2222084	3 GANG VARIABLE
7	2222090	.1 MFD 200 VOLTS
8	2222250	.05 MFD 200 VOLTS
9	2222106	RF & OSC 2 GANG TRIMMER
10	2222170	.1 MFD 400 VOLTS
11	2222162	100 MMFD 600 VOLTS MICA
12	2222106	600 PADDER MANUAL
13	2222096	500 MMFD SILVER MICA
14	2222087	250 MMFD 600 VOLTS MICA
15	2222076	250 MMFD DUAL MICA
16	2222185	.005 MFD 200 VOLTS
17	2222108	.03 MFD 200 VOLTS
18	2222212	.03 MFD 400 VOLTS
19	2222211	.05 MFD 400 VOLTS
20	2222105	.004 MFD 600 VOLTS
21	2222104	.008 MFD 600 VOLTS
22	2222188	.005 MFD 600 VOLTS
23	2222197	20 TO 20MFD 450-400 25V

No.	PART NO	RESISTORS
R1	63-597	470 OHMS 1/4 W. ±20%
2	63-131	200 TO 800 OHMS SEN CONT
3	63-311	15 MOHMS 1/4 W. ±10%
4	63-718	330 MOHMS 1/4 W. ±20%
5	63-713	47 MOHMS 1/4 W. ±20%
6	63-634	820 OHMS 1/4 W. ±10%
7	63-1065	1.5 MOHMS 1 W. ±10%
8	63-140	4700 OHMS 2 W. ±10%
9	63-712	33 MOHMS 1/4 W. ±20%
10	63-271	1 MEGOHM 1/4 W. ±10%
11	63-296	220 MOHMS 1/4 W. ±10%
12	63-647	39 MOHMS 1/4 W. ±10%
13	63-747	470 OHMS 1/4 W. ±10%
14	63-971	220 OHMS 2 W. ±20%
15	63-134	VOL CONT-TONE CONT & SW
16	63-768	56 MOHMS 1/4 W. ±10%
17	63-649	56 MOHMS 1/4 W. ±10%
18	63-648	330 OHMS 2 W. ±10%
19	63-968	800 OHMS 2 W. ±10%
20	63-595	100 MOHMS 1/4 W. ±20%

No.	PART NO	MISCELLANEOUS
1	S 8819	ANTENNA MOTOR NOISE CHOKE
2	S 9081	ANTENNA COIL
3	85-261	AUTOMATIC SELECTOR SWITCH
4	S 8968	R.F. TRANSFORMER
5	S 8967	1ST I.F. TRANSFORMER
6	S 9147	OSCILLATOR TRANSFORMER
7	S 9178	TUNING EYE TUBE SOCKET
8	178-284	2 VOLT TRANSFORMER
9	190-15	NON-SYNCHRONOUS VIBRATOR
10	149-422	ELECTRO DYNAMIC SPEAKER
11	95-251	VIBRATOR HASH CHOKE
12	20-213	POWER INPUT TRANSFORMER
13	95-749	AUDIO OUTPUT TRANSFORMER
14	83-1192	A.C. LINE SWITCH ON VOLUME CONTROL
15	20-228	HEATER LINE CHOKE
16	200-28	DIAL LIGHT MAZDA NO 44
17	20-229	A.C. LINE CHOKE
18	36-15	FUSE 20 AMPERES
19	78-466	FOOT CONTROL SOCKET
20	78-92	TUNING EYE SOCKET JUMPER
21	85-285	FOOT CONTROL SWITCH ASSEMBLY
22	S 8971	AUTOMATIC OSCILLATOR COIL
23	S 8972	AUTOMATIC OSCILLATOR COIL
24	S 8973	AUTOMATIC OSCILLATOR COIL
25	S 8974	AUTOMATIC OSCILLATOR COIL
26	S 8975	AUTOMATIC OSCILLATOR COIL

ALIGNMENT:

The alignment of the receiver is one of the most important functions that a service man performs, and the instructions must be carefully followed.

CAUTION:

Great care should be taken while making all adjustments on the receiver to have the volume control turned full on. The intensity of the signal should be reduced only at the signal generator.

The signal for the entire alignment procedure, both I.F. and R.F. is fed through a special Zenith dummy which can be purchased from your Zenith distributor—Part No. S9189.

The capacities in the Zenith dummy as shown in Fig. 2 are identical with the Lincoln antenna, and if the receiver is adjusted accordingly, the instrument will operate properly when installed in the car.

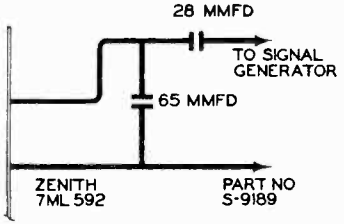
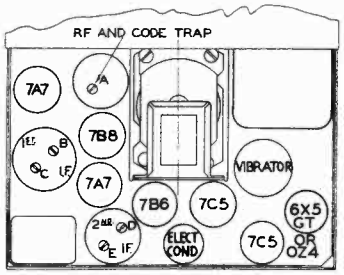


FIG. 2

NOTE:

This receiver is equipped with an adjustable sensitivity control located on the side of the chassis as shown in Fig. 1. The control is set at the factory to a position which gives sensitivity of 6 microvolts at 1 watt output. It is found advisable to hold the receiver at this level as any higher sensitivity may result in excessive background noise and unless laboratory equipment is available for measuring sensitivity, it is not advisable to change this setting.

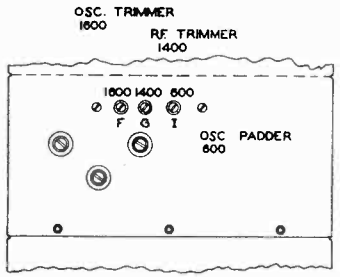
3. The R.F. and code trap adjustment screw A (see Fig. 3) is adjusted for maximum response.
4. The adjustment screws B, C, D and E (see Fig. 3) are then adjusted in order for maximum response.
5. The code trap A is then adjusted for minimum response.



TUBE LAYOUT—MODEL 7ML 592
FIG. 3

R.F.—

1. The receiver is returned to manual tuning.
2. The tuning control is rotated until the condenser plates are out of mesh (1600 K.C.)
3. The signal generator is set to 1600 K.C.
4. Adjust the 1600 K.C. oscillator trimmer F (see Fig. 4) for maximum response.
5. Set signal generator to 1400 K.C. and rotate the tuning control until a signal is heard.
6. Adjust the R.F. trimmer G (see Fig. 4) and the antenna trimmer H (see Fig 5) for maximum response.
7. Set the signal generator to 600 K.C. and rotate the tuning control until signal is heard.
8. The condenser gang is then rocked slightly while adjusting the 600 K.C. padder I (see Fig. 4) for maximum response.



TRIMMER LAYOUT FIG. 4 MODEL 7ML592

3. Adjust the No. 1 screw (see Fig. 5) with the wrench provided until the desired station is tuned to the loudest point.
4. Adjust No. 1 nut (see Fig. 5) for maximum signal.

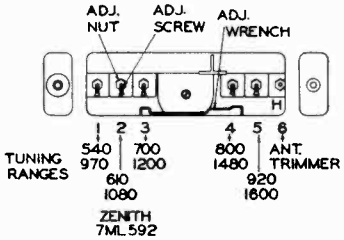


FIG. 5

5. Repeat the last two above operations to make sure the adjustments are accurate.
6. The same procedure is followed in setting the remaining four adjustments, selecting a station within the tuning range of each adjustment screw and placing the selector switch in the corresponding position for each adjustment screw.

SETTING THE ROTO-SELECTOR:

The tuning range is shown below each adjustment number (see Fig. 5).

1. Turn receiver on and allow it to operate for half an hour before making any adjustment.
2. Select a station within the range of position 1 on the Roto-Selector
7. Place escutcheon in position and secure in place with screws (see Fig. 6).
8. Place the control knobs in the proper position.

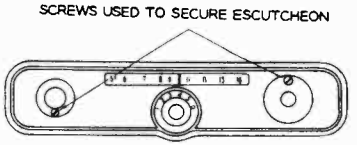


FIG. 6

A station adjusting eye is available at your Zenith distributor. It is especially essential when setting the Roto-Selector on a strong signal. This eye may also be used for alignment work instead of an output meter.

A jumper is provided on the test socket (see Fig. 1) located on the bottom of the receiver. Removing of this jumper will open the voice coil and allow you to connect your output meter to the voice coil side of the output transformer.

If you have the type of output meter which is usually connected to the plate of the output tube, it may be adapted for

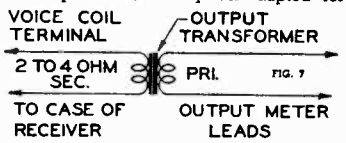


FIG. 7

this type of connection by following the instructions shown in Fig. 7.

The stringing of the dial cord is most important for unless properly strung the cord will jump off the pulleys. Fig 8 shows the proper way to string the dial cord.

FIG. 8

AIR-KING PRODUCTS CO. INC.

MODEL 4016
MODEL 4037

MODEL 4037

This receiver comprises a five tube superheterodyne receiver, employing the new 1.4 volt battery tubes. This receiver operates on either batteries, or 110-125 volts A.C.-D.C.

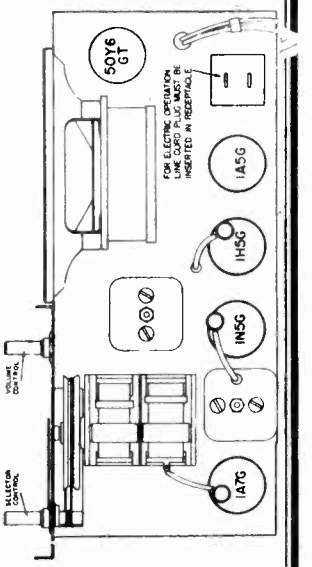
The frequency range covered is standard broadcast, 530 to 1730 kc and some of the low frequency police transmitters.

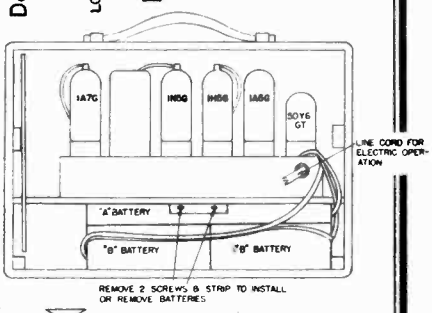
ELECTRIC OPERATION:

A power cord and plug is provided in a compartment at the rear of the cabinet. To place the set in operation, open the flap cover which is secured by the snap fastener and remove the power cord plug from its receptacle in the chassis. Stretch the line cord to its full length and plug it into the electric outlet. Finally, the set may be switched on by turning the volume control knob in a clockwise direction. A pilot light is provided which illuminates the dial when the set is operated on the power lines.

Do not attempt to close the flap when the line cord is plugged into the electric outlet.

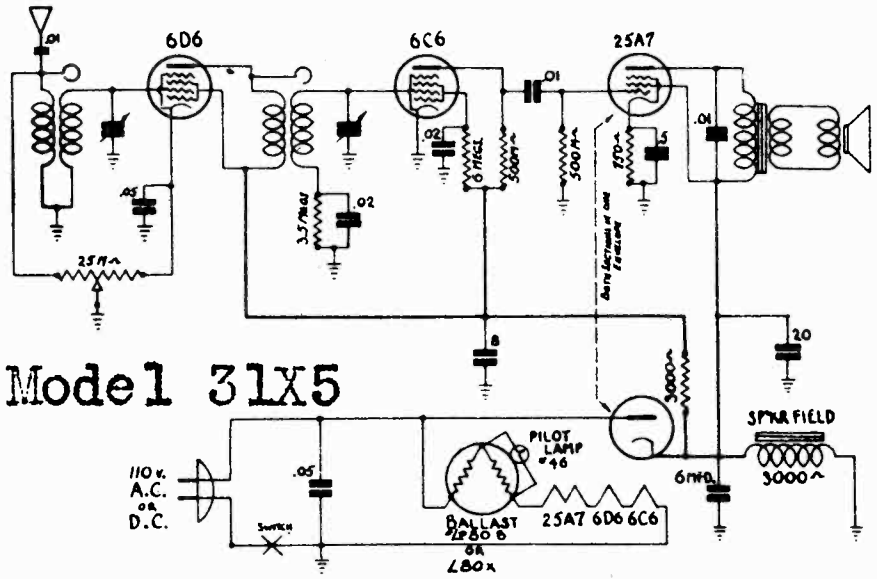
LOCATION OF TUBES & BATTERIES

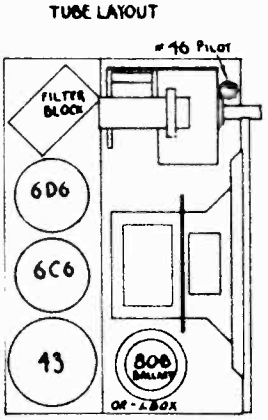


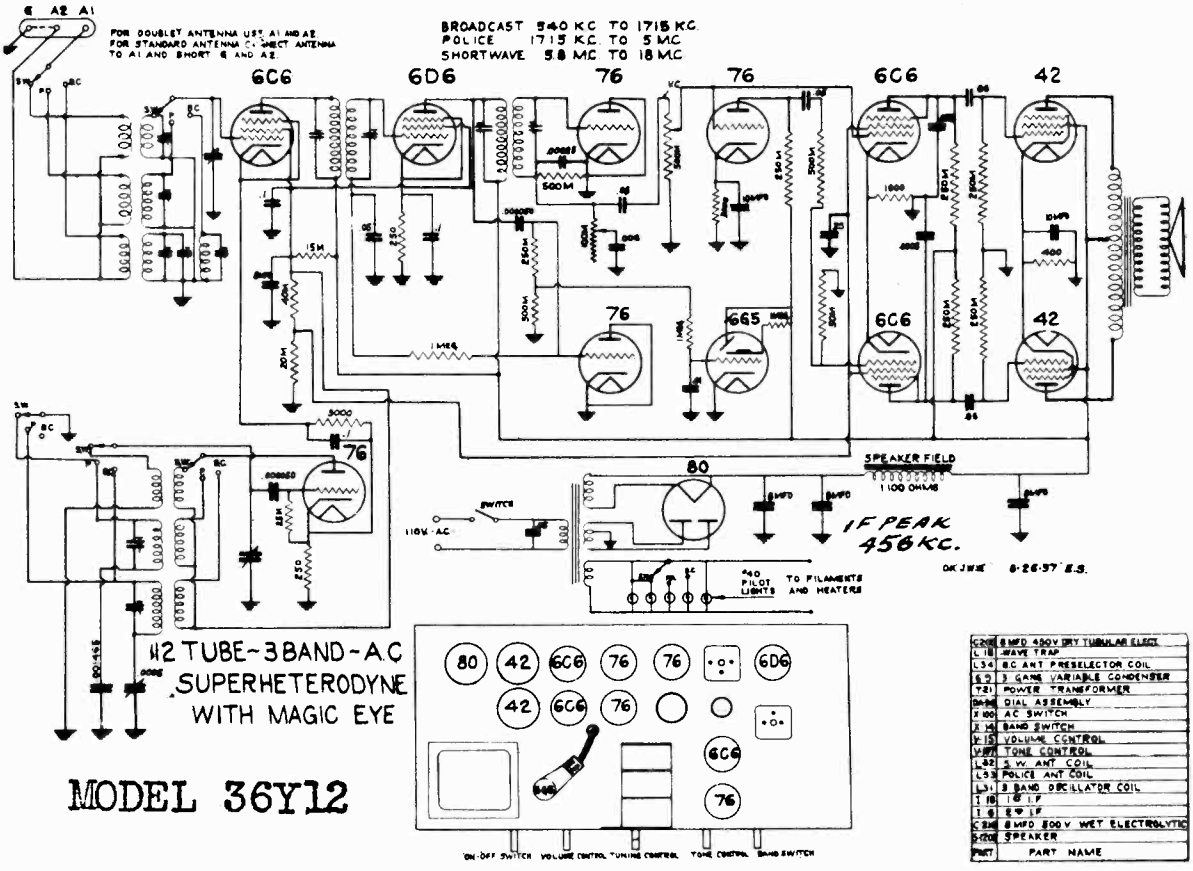


MODEL 31X5
MODEL 36Y12

ZEPHYR RADIO CO.







C2	8 MFD 450 V DRY TUBULAR ELECT.
L 18	WAVE TRAP
L 34	BC ANT PRESELECTOR COIL
6 D	3 GANG VARIABLE CONDENSER
T 21	POWER TRANSFORMER
D	DIAL ASSEMBLY
S 100	AC SWITCH
S 14	BAND SWITCH
R 15	VOLUME CONTROL
VR 17	TONE CONTROL
L 32	S.W. ANT COIL
L 33	POLICE ANT COIL
L 31	S BAND OSCILLATOR COIL
T 16	1ST I.F.
T 15	2ND I.F.
C 32	8 MFD 300 V WET ELECTROLYTIC
SPKR	SPEAKER
PART	PART NAME