

WELLS-GARDNER & CO.

MODEL 7K Series Schematic

Tuning Frequency Range

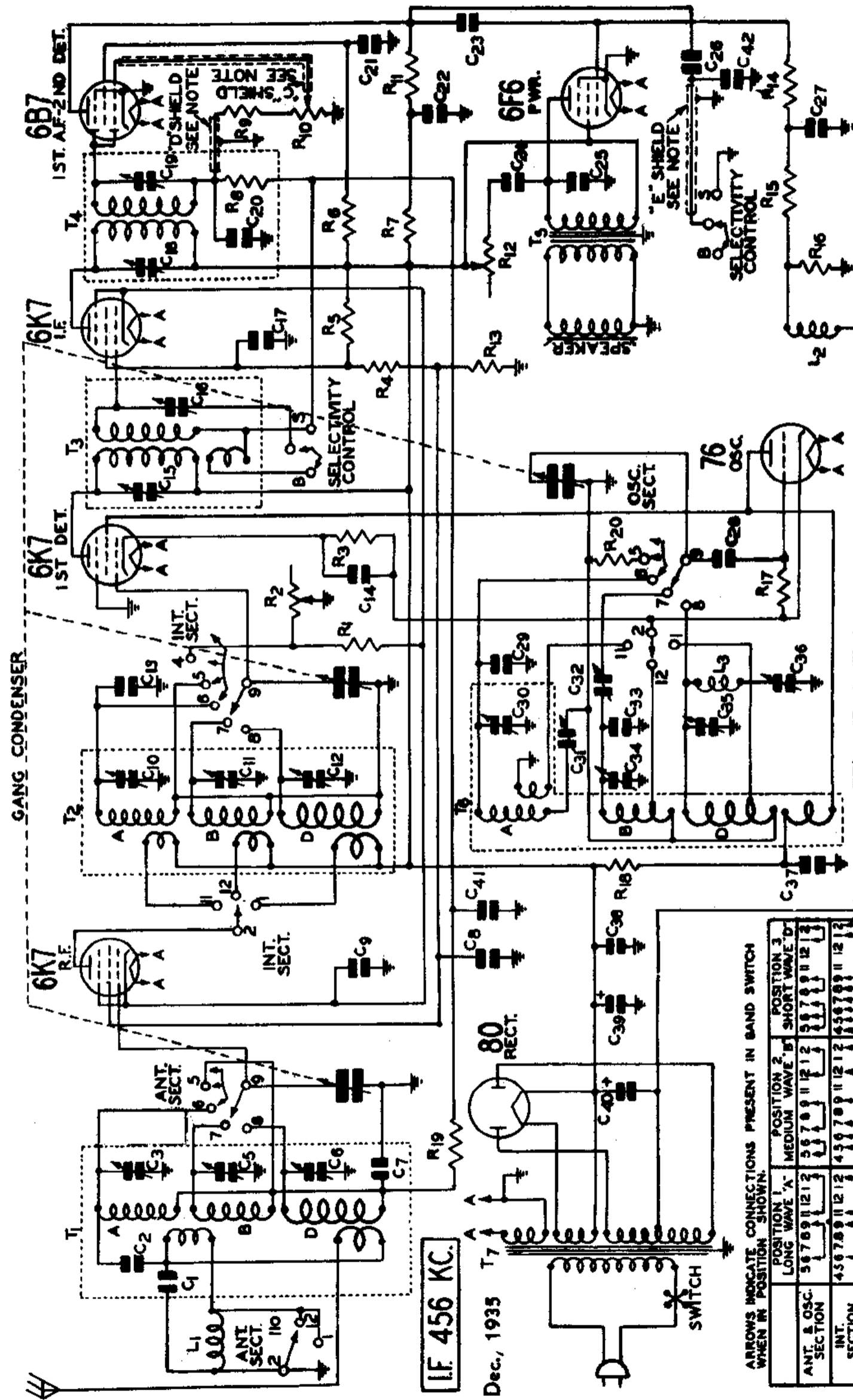
- A Range 148 to 390 KC.
- B Range 535 to 1730 KC.
- D Range 5750 to 18300 KC.

Sensitivity

- A Range Average 1.0 Microvolts Absolute
- B Range Average 1.0 Microvolts Absolute
- D Range Average 2.0 Microvolts Absolute

Power Consumption - 68 Watts (At 115 volts 60 cycles)

Power Output 3 Watts Undistorted
Selectivity - 28 KC Broad at 1000 times Signal (Sharp)



- GROUPS OF CIRCUIT ELEMENTS ENCLOSED IN DOTTED RECTANGLES COMPRISE DISTINCT MECHANICAL ASSEMBLIES. "E" AND "S" ON SELECTIVITY CONTROL DENOTES BROAD AND SHARP RESPECTIVELY. THE CAPACITY OF SHIELDS C D E IS 50 MMF EACH.
- T 1 Antenna R.F. Trans.
 - T 2 Interstage R.F. Trans.
 - T 3 1st I.F. Trans.
 - T 4 2nd I.F. Trans.
 - T 5 Output Trans.
 - T 6 25 ohm 2.0 W. Inductor
 - T 7 Power Trans.
 - L 1 "A" Range Ant. Reactor
 - L 2 Speaker Field
 - L 3 Osc. Tracking Coil
- R 11 6000 ohm .5 W.
 - R 12 15000 ohm Tone Cont.
 - R 13 30000 ohm .5 W.
 - R 14 50000 ohm .2 W.
 - R 15 100000 ohm .2 W.
 - R 16 25 ohm 2.0 W.
 - R 17 8000 ohm .2 W. (Armored Wire Wound)
 - R 18 25000 ohm 1.0 W.
 - R 19 10000 ohm .2 W.
 - R 20 9000 ohm .2 W.
- C 2 500 mmf.
 - R 1 150 ohm .2 W.
 - R 2 2500 ohm } Dual Vol.
 - R 10 50000 ohm } Control
 - R 3 2500 ohm .2 W.
 - R 4 6000 ohm .2 W.
 - R 5 16000 ohm .2 W.
 - R 6 30000 ohm .5 W.
 - R 7 20000 ohm .2 W.
 - R 8 2.0 megohm .2 W.
 - R 9 5000 ohm .1 W.
- C 31 100-200 mmf. } Dual
 - C 32 300-600 mmf. }
 - C 33 10 mmf.
 - C 34 2-25 mmf.
 - C 35 2-25 mmf.
 - C 36 40-100 mmf.
 - C 37 10 mf. 250 V.
 - C 38 10 mf. 350 V.
 - C 39 18 mf. 500 V. Electrolytic
 - C 40 14 mf. 400 V. Electrolytic
 - C 41 .01 mf. 180 V.

ARROWS INDICATE CONNECTIONS PRESENT IN BAND SWITCH WHEN IN POSITION SHOWN.

	POSITION 1 LONG WAVE 'A'	POSITION 2 MEDIUM WAVE 'B'	POSITION 3 SHORT WAVE 'D'
ANT. & OSC. SECTION	5 6 7 8 9 12 12	5 6 7 8 9 12 12	5 6 7 8 9 12 12
INT. SECTION	4 5 6 7 8 9 12 12	4 5 6 7 8 9 12 12	4 5 6 7 8 9 12 12

CONTACT LOCATIONS 3, 4 & 10 IN ANT. & OSC. SECTIONS & 3 & 10 IN INT. SECTION ARE BLANK.

- C 1 250 mmf.
- C 2 20 mmf.
- C 3 2-25 mmf.
- C 5 2-25 mmf.
- C 6 2-25 mmf.
- C 7 .05 mf. 180 V.
- C 8 .05 mf. 240 V.
- C 9 25 mf. 180 V.
- C 10 2-25 mmf.
- C 11 2-25 mmf.
- C 12 2-25 mmf.
- C 13 25 mmf.
- C 14 .05 mf. 180 V.
- C 15 70-150 mmf. } Dual
- C 16 70-150 mmf. }
- C 17 .25 mf. 240 V.
- C 18 70-150 mmf. }
- C 19 150-250 mmf. }
- C 20 50 mmf.
- C 21 .25 mf. 360 V.
- C 22 .25 mf. 360 V.
- C 23 .01 mf. 480 V.
- C 24 .05 mf. 600 V.
- C 25 .002 mf. 600 V.
- C 26 .004 mf. 600 V.
- C 27 .03 mf. 180 V.
- C 28 35 mmf.
- C 29 35 mmf.
- C 30 2-25 mmf.

MODEL 7K Series
Socket, Voltage
Trimmers, Coil Data

WELLS-GARDNER & CO.

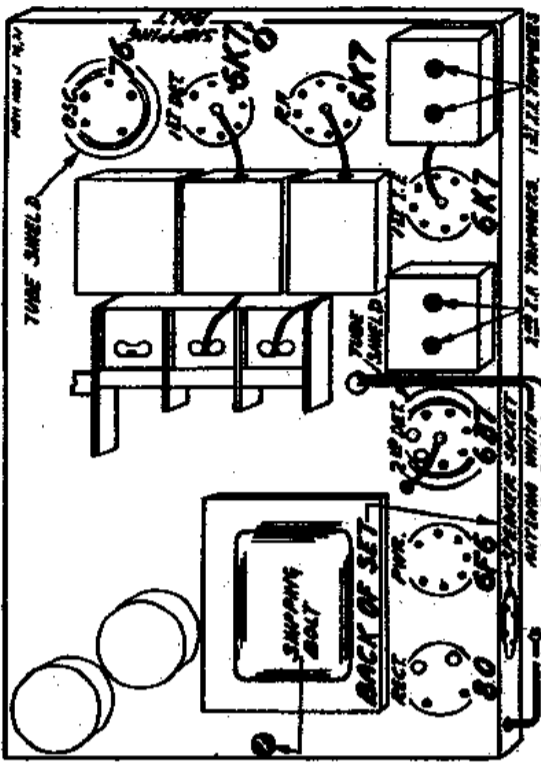


Fig. 5—Location of Tubes

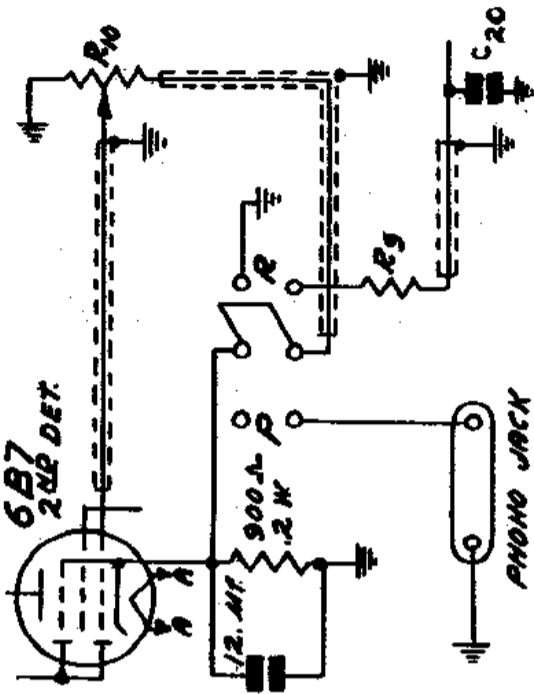


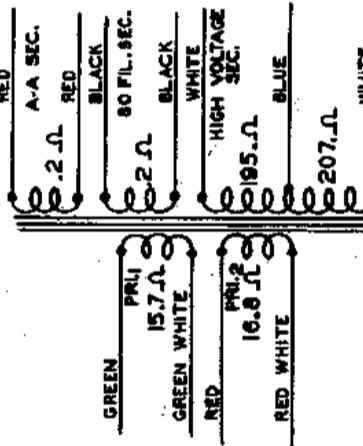
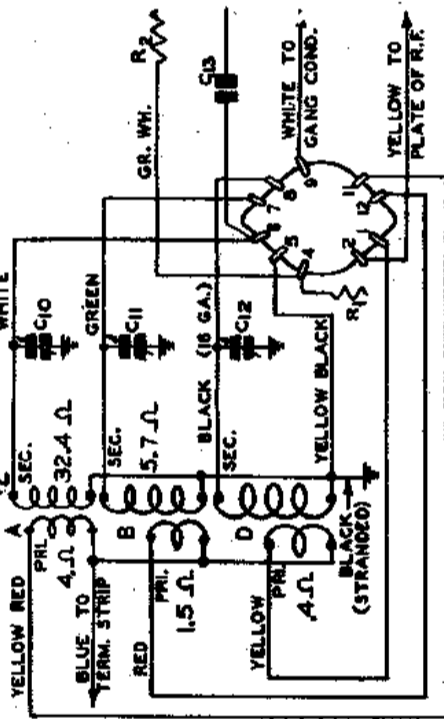
Fig. 7—Phonograph Connections

VOLTAGES AT SOCKETS
Antenna Shorted to Ground

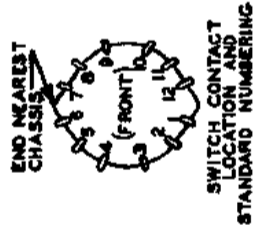
Type of Tube	Function	Heater or Filament Current M. A.	Plate to Ground	Screen to Ground	Cathode to Current	Cathode to Ground
6K7	R.F.	6.0	250	110	3.0	9.0
6K7	1st Det.	6.0	250	100	8.3	3.3
76	Osc.	6.0	100			5.0
6K7	I.F.	6.0	250	137	3.0	11.0
6B7	2nd Det. & 1st A.F.	6.0	50(1)	40(1)		3.2
6F6	Power	6.0	230	250	16.5(2)	36.0
80	Rectifier	4.8				72.0

(1) 500 volt scale (1000 ohms per volt) (2) Measured across R16.

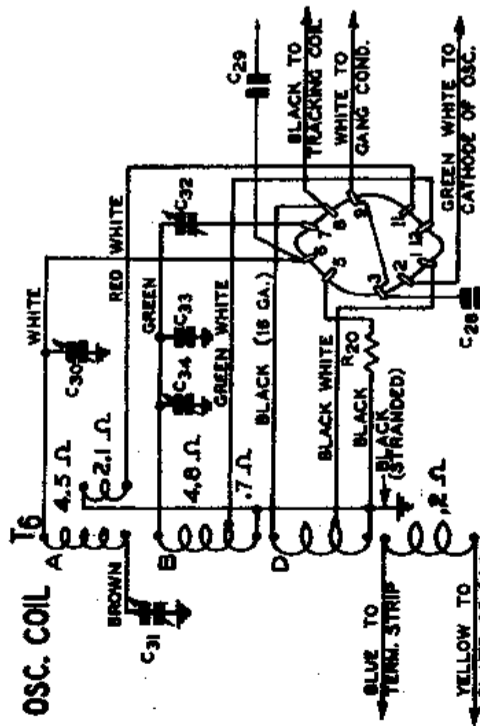
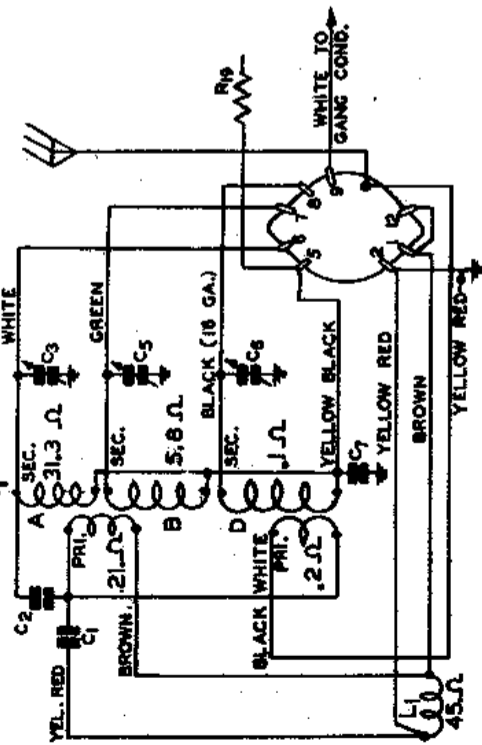
INTERSTAGE R.F. TRANS.



UNIVERSAL POWER TRANS.
PART NO. 53 X 93



ANTENNA R.F. TRANS.



NOTE: RESISTANCE VALUES NOT SHOWN ARE SMALL.

Fig. 4—Color Coding of Coil Wires and D. C. Resistance List in this Manual

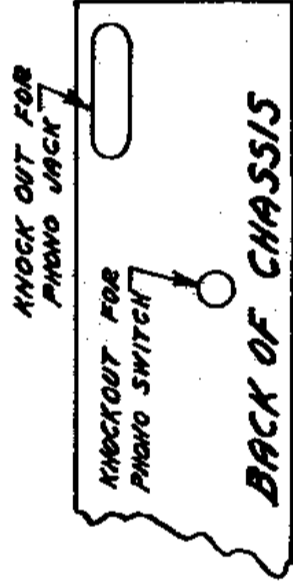


Fig. 8—Location of Phono Knockouts

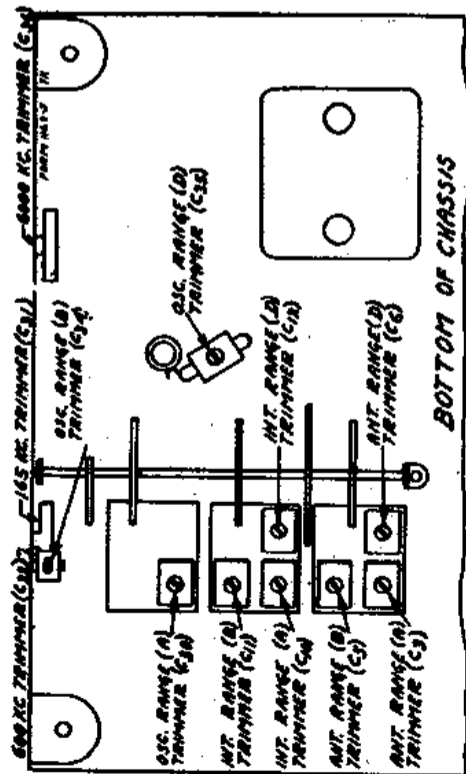


Fig. 3—Location of Trimmers

Intermediate Frequency 456 KC.
Speaker 6" and 8" Dynamic

WELLS-GARDNER & CO.

MODEL 7K Series Alignment, Phono, Resistance

Alignment and Calibration

Correct alignment is extremely important in connection with all wave receivers. 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 an accurately calibrated signal at 456, 380, 350, 165, 1730, 1500, 600, 18,300, 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. If a station is tuned in with the selectivity control in the broad position and this control is then turned to the sharp position, the station may disappear. This is not an indication that the receiver is out of alignment.

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 .1 mf. condenser to the grid of the 1st detector.

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

Turn the band selector to the Range B position (medium wave band—green dial color).

Turn the selectivity control to the sharp position and keep it in this position for all adjustments.

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 four 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. 5.

Range A Alignment

380 KC Adjustment

Set the signal generator for 380 KC. Turn the rotor of the tuning condenser to the full open position.

Turn the band selector to the Range A position (long wave band—purple dial color).

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 A trimmer (C30) until maximum output is obtained. The location of this trimmer is shown in Fig. 3

350 KC Adjustment

Set the signal generator for 350 KC. Turn the rotor of the tuning condenser carefully until maximum output is obtained.

Adjust the interstage Range A trimmer (C10) and antenna Range A trimmer (C3) to maximum.

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

165 KC Adjustment

Set the signal generator for 165 KC. Turn the tuning condenser rotor until maximum output is obtained.

Turn the rotor slowly back and forth at the same time adjusting the 165 KC trimmer until the peak of greatest intensity is obtained. See Fig. 3 for location of this trimmer.

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.

Turn the band selector to the Range B position (medium wave band—green dial color).

Keep the antenna lead of the receiver connected through the 200 mmf. condenser to the output of the signal generator.

Adjust the oscillator Range B trimmer (C34) 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 medium wave band scale. Retighten the set screw.

Adjust the interstage Range B trimmer (C11) and antenna Range B trimmer (C5) 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 greatest intensity is obtained. See Fig. 3 for location of this trimmer.

Range D Alignment

18,300 KC Adjustment

Set the signal generator for 18,300 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 D position (short wave band—red dial color).

Adjust the oscillator Range D trimmer (C35) 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 (C12) and antenna Range D trimmer (C6) 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 greatest intensity is obtained.

Then go back and repeat the procedure as given for the 18,300 KC adjustment. If it is found necessary to make any appreciable change in the setting 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.

Servicing R. F. Coil Assemblies

The R. F. transformers and oscillator coil assemblies in this receiver are sold complete with can. This is due to the fact that the trimmers are soldered to the can, and cannot be easily disassembled.

The lead colors and resistances of the various windings in each assembly are shown in Fig. 4.

If it is ever necessary to remove one of coil assemblies from the can, proceed as follows: First remove the nuts from the screws at the top of the can. The outside lug on the trimmer condenser is inserted in a slot in the coil can, and this lug is soldered into position.

Apply a soldering iron to the can at the point of the soldered connection. Then with a screw driver lift up on the outside edge of the trimmer (edge soldered to can) until the trimmer is clear of the can. After the trimmers are all unsoldered, the coil can be taken out.

Twenty-five Cycle Receivers

The twenty-five cycle receiver can be operated satisfactorily from a sixty cycle power supply. However, the reverse is not true, the sixty cycle receiver cannot be operated from a twenty-five cycle power supply.

A 115-230 Volt, 40 to 60 cycle as well as other power transformers with special power ratings are also available for this model.

Phonograph Connections

Phonograph connections can be made as shown in Fig. 7. The parts required are shown in the parts list. Knockouts are provided in the back panel of the chassis for mounting the phono jack and phono switch—See Fig. 8.

For mounting the 12 mfd. 25 volt dry electrolytic condenser, two No. 27 drill holes should be drilled in the side of the chassis directly below the wet electrolytic condensers. These holes are 1/4" from the bottom, 3/8" and 3/4" from the front of chassis. The ground lug which extends out from the side of the chassis should be bent back into the chassis wall.

Mount the single lug insulated terminal strip (P-4A49) on the mounting bolt of the double lug insulated terminal strip (located on the rear panel, directly in back of the band selector switch).

The connections are made by opening the diode return circuit at the volume control. Unsolder the 50,000 ohm resistor R9 from the lug at the volume control and the terminal strip. Also unsolder from this terminal strip the shielded lead which runs to the 2nd I.F. transformer. Cut this shielded lead to length and connect it to the lug on the new terminal strip (P-4A49). Connect one side of the 50,000 ohm resistor R-9 to the same lug and the other side to the phono switch—see Fig. 7.

The extra shielded lead which is provided should be connected from the volume control to the phono switch as shown in Fig. 7. Be sure to remove the shielding from the portion of this lead that passes over the volume control.

Remove the ground from the cathode terminal of the 6B7 2nd detector tube socket by bending the chassis ground lug away from this terminal. Be sure to solder back to this lug any leads that were connected to it (not including the cathode connection).

Connect one side of the 12 mfd. 25 volt electrolytic condenser to ground and the other side of this condenser to the cathode of the 6B7 2nd detector tube socket and to the phono switch as shown in Fig. 7. To this same terminal on the phono switch connect the 900 ohm resistor. The other side of the resistor is connected to ground. Complete the other connections as illustrated in Fig. 7.

A high impedance pickup should be used. If a low impedance pickup is used a step-up transformer will be required for sufficient volume. The volume control and tone control of the set will regulate the phono volume and tone.

D. C. Resistance of Windings Refer to Fig. 4.

Part No.	Item	Code	D.C. Resistance in Ohms
P-9A457	Antenna R.F. Transformer	T1	
	Range "A" and "B" Primary Winding		21.0
	Range "D" Primary Winding		0.2
	Range "A" Secondary Winding		31.3
	Range "B" Secondary Winding		5.6
	Range "D" Secondary Winding		0.1
P-9A458	Interstage R.F. Transformer	T2	
	Range "A" Primary Winding		4.0
	Range "D" Primary Winding		1.3
	Range "A" Secondary Winding		0.4
	Range "B" Secondary Winding		32.1
	Range "D" Secondary Winding		5.7
P-9A459	Oscillator Coils	T6	
	Range "A" Grid Coil		4.5
	White to Brown		2.1
	Range "A" Cathode Coil		4.8
	Red White to Ground		0.7
	Range "B" Grid Coil		0.7
	Green White tap to Green		0.7
	Green White tap to Ground		0.7
	Range "D" Grid Coil		Small
	Black White tap to Black		Small
	Black White tap to Ground		Small
	Oscillator Plate Coil		0.2
P-9A460	1st I.F. Transformer	T3	
	Primary Winding		11.5
	Secondary Winding		11.0
	Coupling Winding		0.5
P-9A461	2nd I.F. Transformer	T4	
	Primary Winding		11.5
	Secondary Winding		4.3
P-12A211	Dynamic Speaker (8")	L2	
	Speaker Field		1050.0
	Speaker Voice Coil		4.1
	Output Transformer	T5	
	Primary Winding		510.0
	Secondary Winding		1.0
P-35X51	115-230 Volt, 40-60 Cycle Power Transformer	T7	
	Primary Windings (Separately)		16.8
	Red White to Red		15.7
	Green White to Green		
	Primary Windings in Parallel (115 Volt Operation)		8.1
	Green White and Red White to Green and Red		
	Primary Windings in Series (230 Volt Operation)		32.5
	Red White to Green		
	Secondary Windings		
	Tube Filament Winding (A-A)		0.2
	80 Filament Winding		0.2
	High Voltage Winding		
	Center Tap to Inside		195.0
	Center Tap to Outside		207.0
P-9A462	"A" Range Antenna Reactor	L1	45.0
P-9A391	High Frequency Oscillator Tracking Coil	L3	1.1

Switch Contact Location Numbering

A standard arrangement for switch contact location numbering has been adopted. This numbering is illustrated in Fig. 4. In contact locations not used, the number applying to that particular location is not employed.