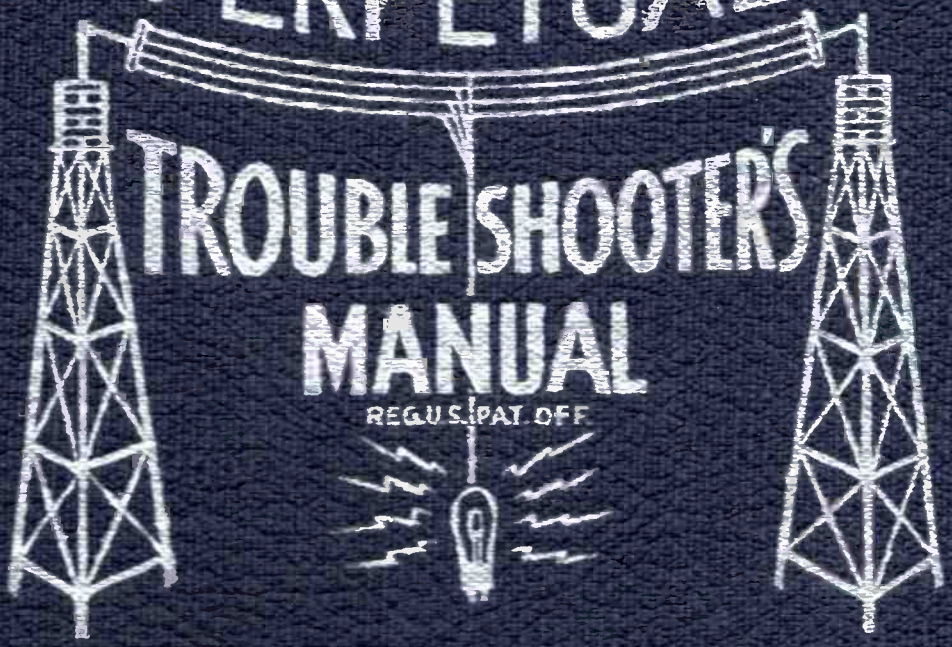
VOLUME XIV

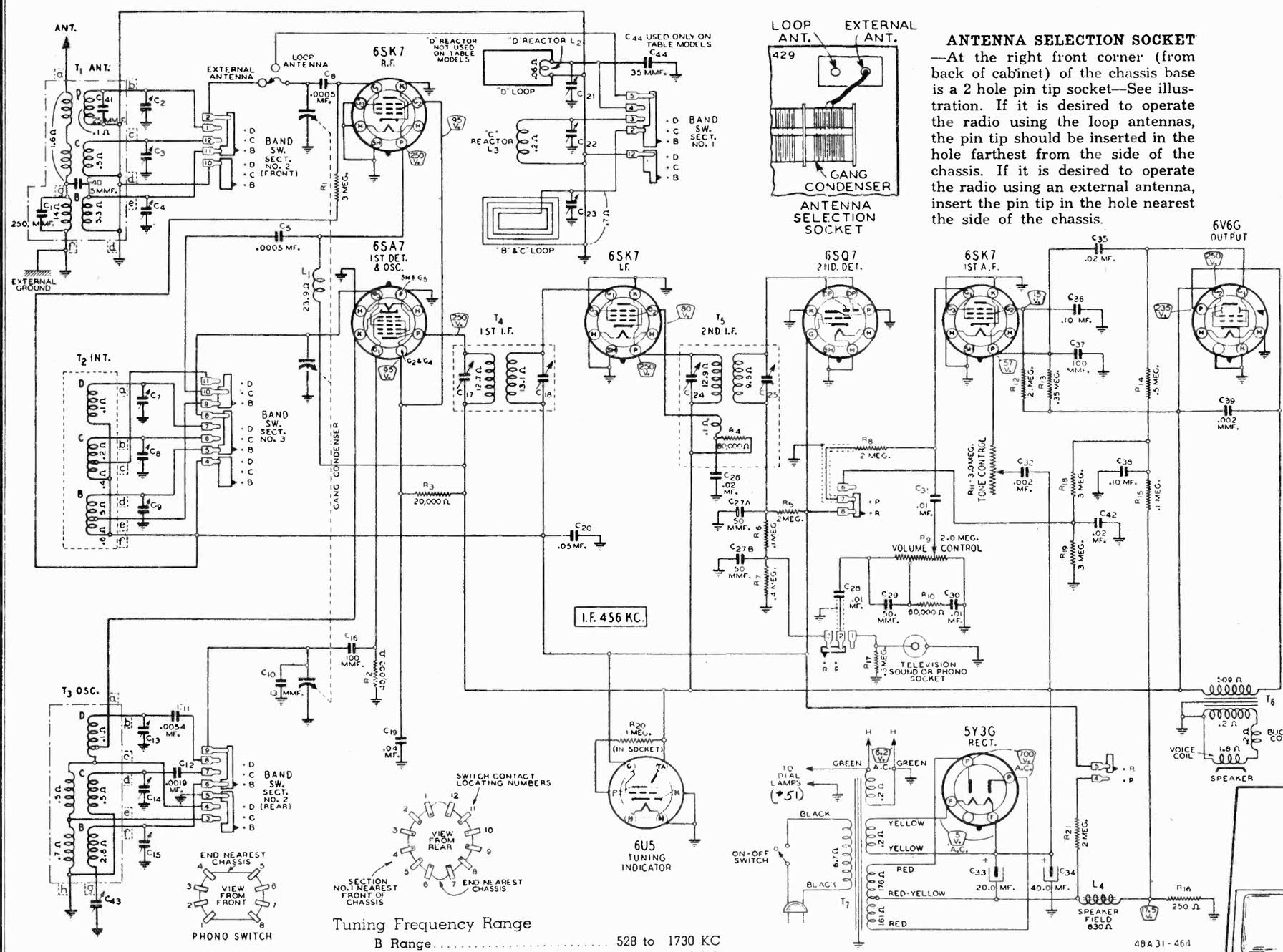
PERPETUAL TROUBLE SHOOTER'S MANUAL

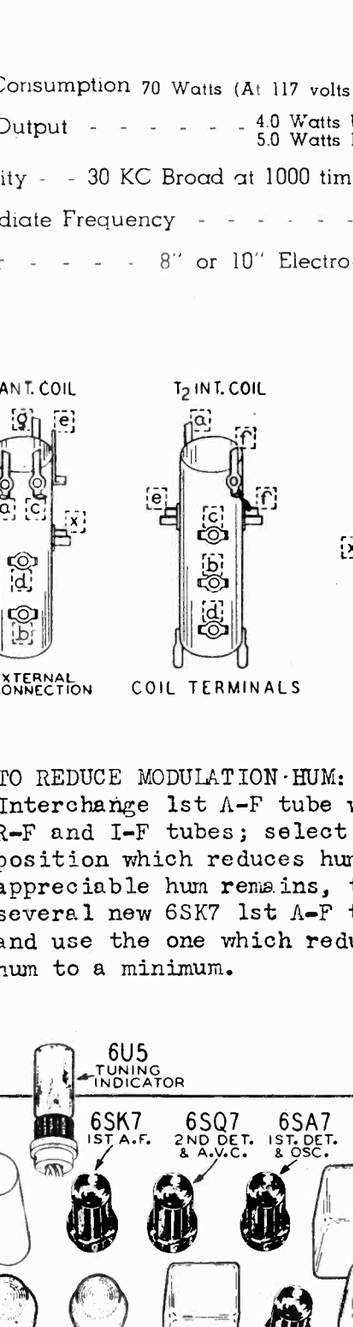


JOHN F. RIDER

MODEL BB-1-7

LAFAYETTE RADIO
RADIO WIRE TELEVISION, INC.

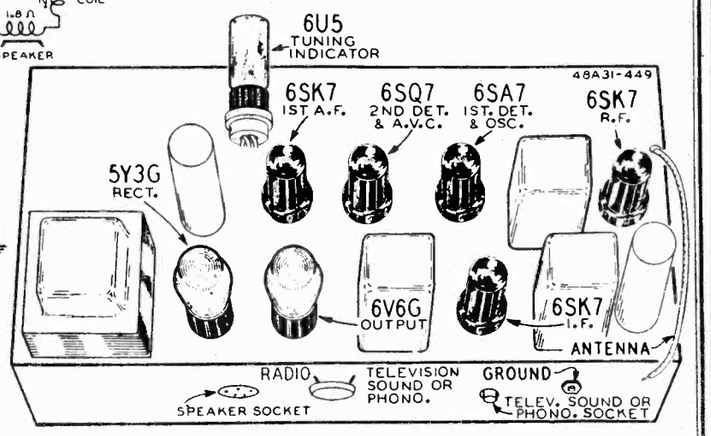




ANTENNA SELECTION SOCKET—At the right front corner (from back of cabinet) of the chassis base is a 2 hole pin tip socket—See illustration. If it is desired to operate the radio using the loop antennas, the pin tip should be inserted in the hole farthest from the side of the chassis. If it is desired to operate the radio using an external antenna, insert the pin tip in the hole nearest the side of the chassis.

Power Consumption	70 Watts (At 117 volts 60 cycles)
Power Output	4.0 Watts Undistorted 5.0 Watts Maximum
Selectivity	30 KC Broad at 1000 times Signal
Intermediate Frequency	456 KC
Speaker	8" or 10" Electro-Dynamic

TO REDUCE MODULATION·HUM:
Interchange 1st A-F tube with R-F and I-F tubes; select tube position which reduces hum. If appreciable hum remains, try several new 6SK7 1st A-F tubes and use the one which reduces hum to a minimum.



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

Dial Lamps

The dial lamps used are of the bayonet pin type (bulb No. 51). To replace any lamp, first turn the radio off. Then pull the clip off and replace the lamp.

MODEL BB-1-7

LAFAYETTE RADIO
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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.

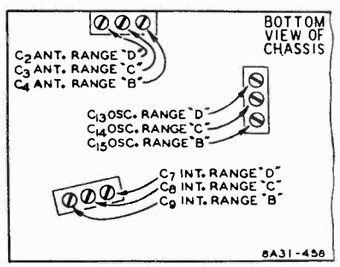
The following equipment is required for aligning:

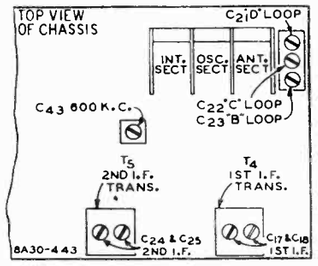
An All Wave Signal Generator which will provide an accurately calibrated signal at the test frequencies as listed.

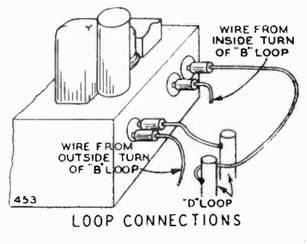
Output Indicating Meter—Non-Metallic Screwdriver.

Dummy Antennas—.1 mf., 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 See Note A	Turn Rotor to Full Open	1st I.F. (C17) & (C18) 2nd I.F. (C24) & (C25)
RANGE B					
1730 KC	Antenna Lead	200 mmf.	B Range	Turn Rotor to Full Open	Oscillator Range B (C15)
1500 KC	Antenna Lead	200 mmf.	B Range	Turn Rotor to Max. Output Set Indicator to 1500 KC—See Note B	Ant. Range B (C4) Int. Range B (C9)
600 KC	Antenna Lead	200 mmf.	B Range	Turn Rotor to Max. Output	600 KC (C43) Rock Rotor—See Note C
RANGE C					
7000 KC	Antenna Lead	400 Ohm	C Range	Turn Rotor to Full Open	Oscillator Range C (C14)
6000 KC	Antenna Lead	400 Ohm	C Range	Turn Rotor to Max. Output	Antenna Range C (C3) Int. Range C (C8)
RANGE D					
22,000 KC	Antenna Lead	400 Ohm	D Range	Turn Rotor to Full Open	Oscillator Range D (C13)
21,000 KC	Antenna Lead	400 Ohm	D Range	Turn Rotor to Max. Output	Ant. Range D (C2) Int. Range D (C7) Rock Rotor—See Note C
LOOP RANGE B					
1500 KC See Note D	None—See Note D		B Range	Turn Rotor to Max. Output	Loop Trimmer (C23) See Note E
LOOP RANGE C					
6000 KC See Note D	None—See Note D		C Range	Turn Rotor to Max. Output	Loop Trimmer (C22) See Note E
LOOP RANGE D					
21,000 KC See Note D	None—See Note D		D Range	Turn Rotor to Max. Output	Loop Trimmer (C21) Rock Rotor—See Note C







LOOP CONNECTIONS

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—For all adjustments, with the exception of the 3 loop range adjustments, the pin tip should be in the external antenna hole of the Antenna Selection Socket—See illustration on page one.

NOTE B—If the pointer is not at 1500 KC on the dial, remove pointer from drive cord. Tune in a 1500 KC signal. Set pointer at the 1500 KC mark on the dial scale. Attach pointer to drive cord.

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

NOTE D—Re-install 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. Insert pin tip in loop antenna hole of Antenna Selection Socket—See illustration on page one.

Note E (CONSOLE MODELS)—Turn knob of 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, 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.

MODELS BL1, B15

LAFAYETTE RADIO
RADIO WIRE TELEVISION, INC.

A standard arrangement for switch contact location numbering has been adopted. This numbering is illustrated in Fig. 5. In contact locations not used, the number applying to that particular location is not employed.

Changes in Early Models

In the early models of this receiver, the antenna transformer (T1) had two Range B Primary windings as shown in Fig. 8.

The oscillator Range B and C trimmer locations varied in the early and intermediate models of this receiver as shown in Figs. 3 and 4.

Referring to Fig. 2, in the early models of this receiver, contact No. 4 in the interstage section of the band selector was not used. The purpose of this contact arrangement is to short out variable resistor R2 in the second short wave position. In these models the relative positions of resistors R1 and R2 were reversed. The common connection from the suppressor grid and cathodes of the R. F. and I. F. amplifier tubes was connected to the control arm of variable resistor R2. The latter was connected to resistor R1 which was grounded at the other end. The by-pass condenser C6 remains connected as before, to the cathode and suppressor grid connection.

The type 6K7 and 6F6 metal tubes replace the types 6D6 and 42 glass tubes respectively which were used in the early models.

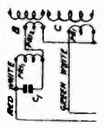


Fig. 8—Antenna Transformer in Early Models

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. 5.

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 differs from the sixty cycle receiver only in the fact that a different power transformer is used. The correct power transformer is shown in the parts list.

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. 9. 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. 10.

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 1¼" from the bottom, ⅞" and 1½" 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.

Replace the single lug insulated terminal strip (located on the rear panel, directly in back of the band selector switch) with (P-4A39) double lug insulated terminal strip with ground lug. Be sure to solder back to this new terminal strip any leads that were connected to the other terminal strip.

The connections are made by opening the diode return circuit at the volume control. Unsolder the 50,000 ohm resistor R9 (covered with saturated sleeving in early models) from the lug at the volume control and from the shielded lead which runs from the I. F transformer. Cut this shielded lead to length and connect to the open lug on the new terminal strip. Connect one side of the 50,000 ohm resistor R9 to the same lug and the other side to the phono switch—see Fig. 9. Ground the shield to the ground lug of the terminal strip.

The extra shielded lead which is provided should be inserted into a piece of saturated sleeving.

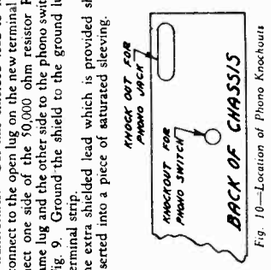


Fig. 10—Location of Phono Knockouts

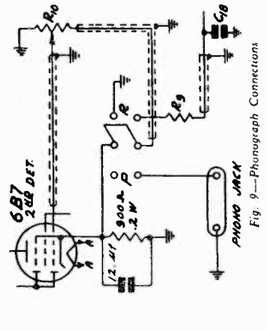


Fig. 9—Phonograph Connections

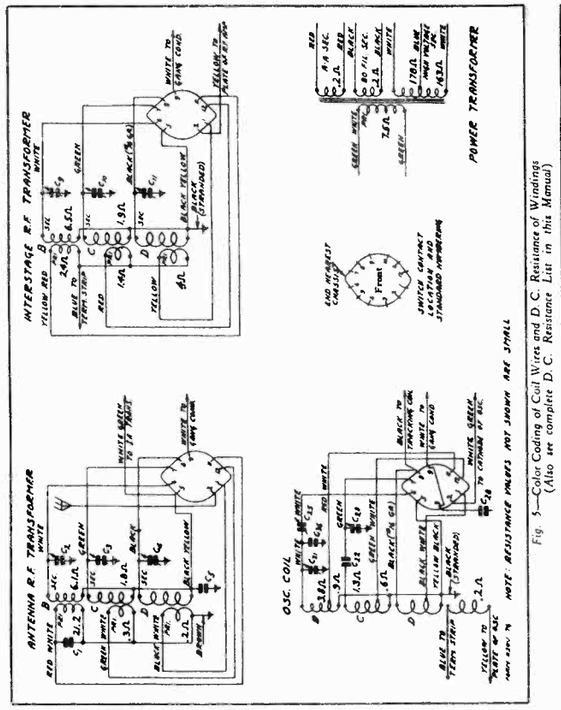


Fig. 5—Color Coding of Coil Wires and D.C. Resistance of Windings (Also see complete D.C. Resistance List in this Manual)

VOLTAGES AT SOCKETS
Line Voltage, 115 - Volume Control at Maximum
Antenna Shorted to Ground

Type of Tube	Function	Heater Filam.¹	Plate to Ground	Screen to Ground	Cathode to Ground	Plate M. A.
6K7 (6D6)	R. F.	6.1	230	95	3.0	6.4
6K7 (6D6)	1st Det.	6.1	230	100	9.0	3.2
76	Osc.	6.1	100			5.2
6K7 (6K8)	1. F.	6.1	230	120	3.0	9.
6B7	2nd Det.	6.1	55(1)	40		2.3
6F6 (42)	Power	6.1	215	230	17(2)	30.0
80	Rectifier	4.7				34. per plate

(1) As read with 300,000 ohm meter
(2) As read across R16

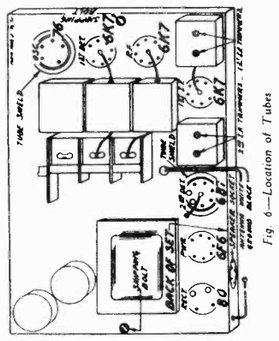


Fig 6—Location of Tubes

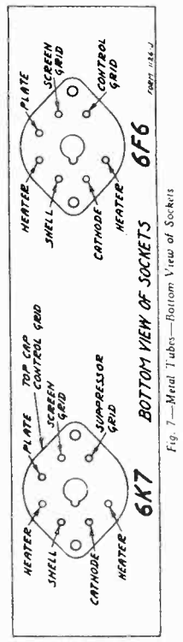


Fig. 7—Metal Tubes—Bottom View of Sockets

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Instructions for Mounting the New 7 Station Automatic Tuning Panel on the 7, 9, 11 and 13 Tube Chassis

(REPLACING MOTOR DRIVE PANEL)

New 7 Station Automatic Tuning Panel

There are 8 push buttons. Buttons Nos. 1 to 3 and 5 to 8 are Automatic Tuning Station Buttons. Button No. 4 is the Manual Tuning Button - See Fig.1. When this button is depressed, the radio is in the manual tuning position.

The small buttons above the push buttons are still used for setting the stations. However, with the new panel, this is done by turning the button clockwise or counter-clockwise until the desired station is tuned in.

The aligning screw, shown in Fig. 1, when turned, moves the iron core of the antenna coil for aligning purposes.

Old Parts Used

Use the following parts of the old assembly:

Escutcheon Plate,
Station Buttons and Hairpin Springs,
Setting Buttons,
Glass Screen and Rubber Bands.

The Following New Parts are Supplied

7 Station Automatic Tuning Panel Assembly.

The parts shown in the list at the end of these instructions.

Removing Old Motor Drive Panel from Chassis

Remove the knobs. Two are set screw knobs and three are the push-on type.

Remove the station buttons by pushing down the lower end of the small hairpin spring at the back of the button and, at the same time, pulling the button off the shaft. Remove the setting buttons by pulling them off.

The screws in the wooden support behind the electric drive panel must be unscrewed and the support removed from the cabinet.

Remove the speaker plug from the socket at the back of the chassis and also the tuning eye tube from its clamp bracket. Loosen the screw holding the bottom shield connection to the back of the chassis. Unscrew and remove the shipping bolts and the "L" bolts from beneath the chassis shelf.

The chassis may then be removed.

Remove the old tuning eye tube bracket from the cabinet.

Turn the electric-manual lever to the electric position.

Unsolder the wire to the silencer switch at the chassis end. Also, unsolder the two motor leads at the A. C. terminal strip under the chassis. Early models used a metal shell condenser which was connected at the same terminal strip. Remove this condenser if one is installed.

Take off the collars from the volume and tone control shafts.

Remove the glass screen by taking out the two screws and removing the two brackets.

Remove the four red mounting screws.

The panel can then be pulled straight out from the chassis.

Mounting New Automatic Tuning Panel on the Chassis

Put a piece of insulating tape on the surface of the support casting at the point shown in Fig. 2. This will prevent possible short circuiting of the switch contatts.

Before mounting the new panel on the chassis, cut off any leads not required as shown in the table - Fig. 7. Bring the tuner panel near the chassis and pass the white-blue tracer and white-red tracer leads through the hole in the chassis under the front section of the gang condenser. Turn the gang condenser until the spring clip on the drive drum is at its lowest position - See Fig. 2 lower left. Line up the drive arm on the large panel drive pulley with the spring clip on the gang condenser drive drum. Since the drive arm will line up with the spring clip under two conditions, refer to Fig. 2 lower left for the correct relation of drive cord winding to drive arm.

Spread the spring clip SLIGHTLY with a small screw driver, bringing this screw driver up from beneath the chassis. Then push the panel toward the chassis, lowering it slightly so that the large drive pulley may be brought up in back of the bracket below the projector compartment. Insert the drive arm in the spring clip.

Mount the panel on the chassis using the four mounting screws at the four points shown in Fig.1.

Secure the two braces to the back of the panel as shown in Fig. 2.

Remove the two screws at the top of the lens housing support bracket. Using the two 8-32 X 3/8" screws supplied, secure the back end of the braces in place. When attaching the brace to the tuner switch side of the lens housing bracket, ground the lug of the braided wire under the screw head as illustrated.

Replace the glass screen using clamps, nuts, and lock washers supplied.

Replace the collars on the volume control and tone control shafts.

Wire the panel in the circuit following Figs. 3,4, 9, 10, 15, and 16.

Replace chassis in cabinet reversing procedure followed when removing the chassis. The wooden shipping support is not used.

The electric-manual lever is not used. A cover plate is supplied which covers the opening left by the removal of this lever. This plate is so made that the back portion should fit snugly into the opening in the cabinet. If it does not, file the cabinet until it fits snugly in place.

Then put the tuning knob on the shaft.

Knobs and Cover Plate

The 5 control knobs formerly used with the motor drive panel are also used with the new automatic tuning panel.

The cover plate used under the tuning knob is described in the previous article.

Alignment

After the new panel is installed, realign the chassis using as a guide the alignment procedure given in the service manual for each chassis.

If a definite peak cannot be reached when making the 1830 KC adjustment on the B range, cut off the compensating condenser C16 in the 9 and 11 tube models, C14 in the 13 tube model and C13 in the 7 tube model.

If a definite peak cannot be reached when making the 22,000 KC adjustment on the D range, simply back off this trimmer as far as it will go and proceed with the 20,000 KC adjustment.

Next align the automatic tuner. The automatic tuning system is aligned by turning the aligning screw which shifts the position of the iron core of the antenna coil while the coil remains stationary.

Depress station button No. 1 - See Fig. 1. Tune in a signal of the frequency shown below for button No. 1. Turn setting button No. 1 clockwise or counter-clockwise until this signal is accurately tuned in. Then turn the aligning screw of button No. 1 clockwise or counter-clockwise until maximum output is obtained.

Follow the same procedure with regard to the other station tuning buttons using the frequencies shown below.

Button No. 1...Aligning Frequency 700 KC
Button No. 2...Aligning Frequency 700 KC
Button No. 3...Aligning Frequency 850 KC
Button No. 5...Aligning Frequency 850 KC
Button No. 6...Aligning Frequency 850 KC
Button No. 7...Aligning Frequency 1100 KC
Button No. 8...Aligning Frequency 1100 KC

Mounting New Panel on Early Chassis Equipped with First Motor Drive Panels

Chassis equipped with the early type motor drive panel may be identified by the fact that when the chassis is removed from the cabinet and the electric-manual lever is in the electric position, all four red mounting screws can be seen - See Fig. 23. On late models, the two top red screws are behind the glass screen and cannot be seen unless this screen is removed - See Fig. 22.

To mount the new automatic tuning panel on the early chassis, first, using a hack saw, cut off the portion of the bracket assembly below the projector compartment as shown in Fig. 21.

Mount the new panel on the chassis using the two bottom mounting screws. Extend a pencil or pointed instrument through the center of the two upper panel mounting holes and place a mark on the bracket extending down from the projector compartment.

Remove the two lower mounting screws and take off the new panel. Drill and tap two holes for the two upper 8-32 mounting screws in the bracket. The new panel can then be mounted by means of the four mounting screws.

Parts Shipped With 7 Station Automatic Tuning Panel

QUANTITY	ITEM	APPLICATION
1.....	20,000 Ohm Resistor.....	To be used when installing panel on 9, 11, and 13 tube chassis only.
2.....	Braces.....	To secure the panel to top of projector assembly.
4.....	8-32 X 3/8" screws.....	2 used for front end of above brace. 2 used for back end of above brace.
2.....	#8 Shakeproof Lock Washers.....	To secure above brace to panel.
2.....	8-32 Hex Nuts.....	To secure above brace to panel.
2.....	Glass Retainer Clamps.....	To hold the glass screen in place.
2.....	6-32 X 1/4" Round Head Screws...	For above.
2.....	#6 Split Lock Washers.....	For above.
1.....	Circular Cardboard Tab with Words "Manual Tuning" on it.....	To be put into manual switch button (4th button from left).
1.....	Round Celluloid Tab.....	To be pushed into above mentioned button over the cardboard tab.
4.....	8-32 X 1/4" Mounting Screws..... (Heads Red)	To mount panel to chassis.
4.....	#8 Split Lock Washers.....	For above.
1.....	Round Cover Plate.....	To cover opening in front panel of cabinet left by removal of the electric-manual lever.

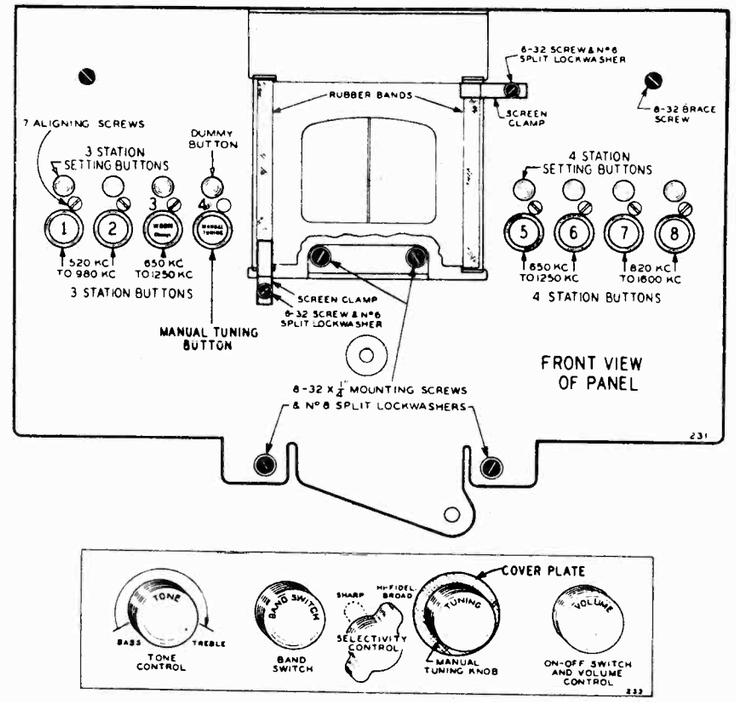

Fig. 1—Automatic Tuning Panel—Front View

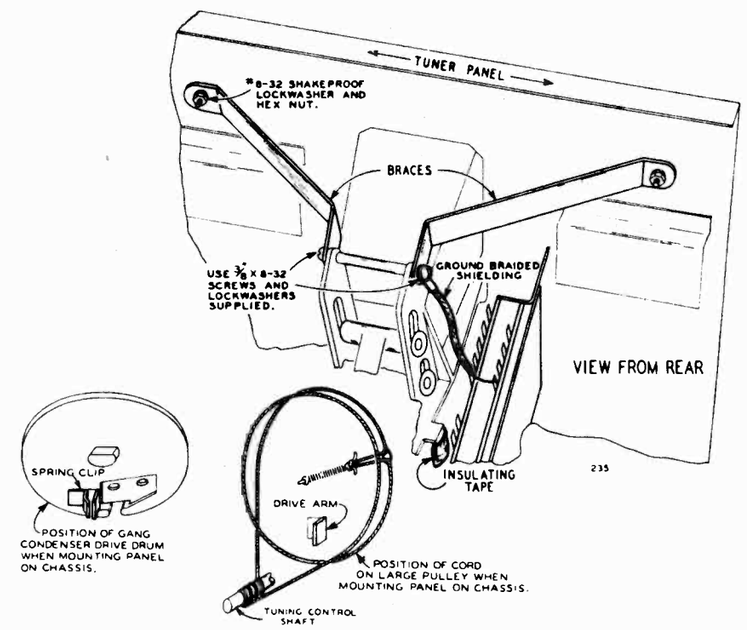

Fig. 2 Automatic Tuning Panel--Back View

MODEL B33

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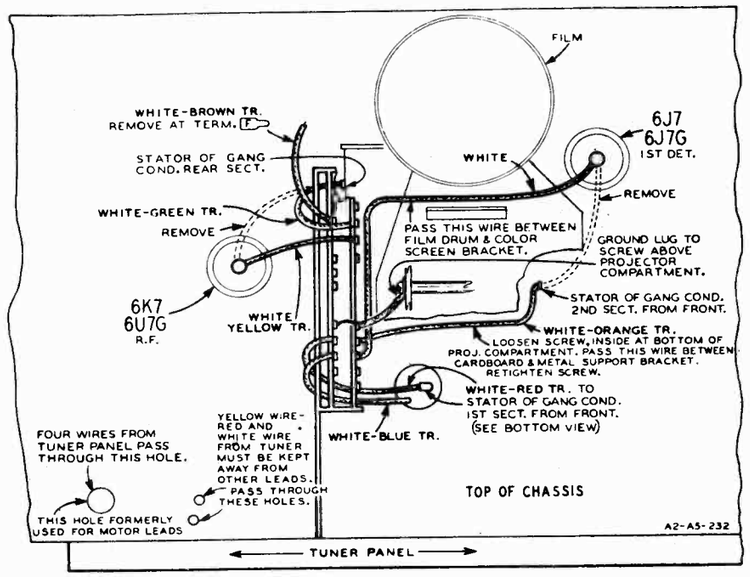

Fig. 9—9 and 11 Tube Chassis—Top View

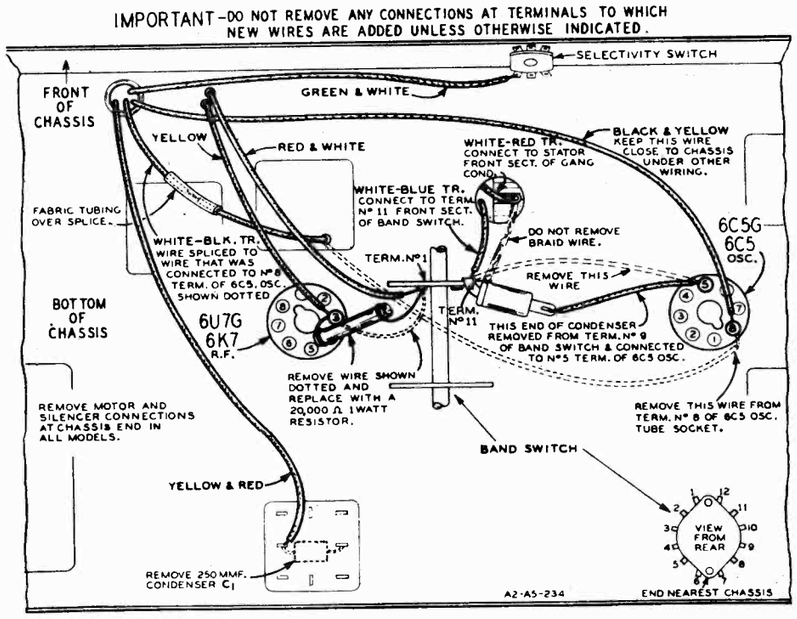

Fig. 10—9 and 11 Tube Chassis—Bottom View

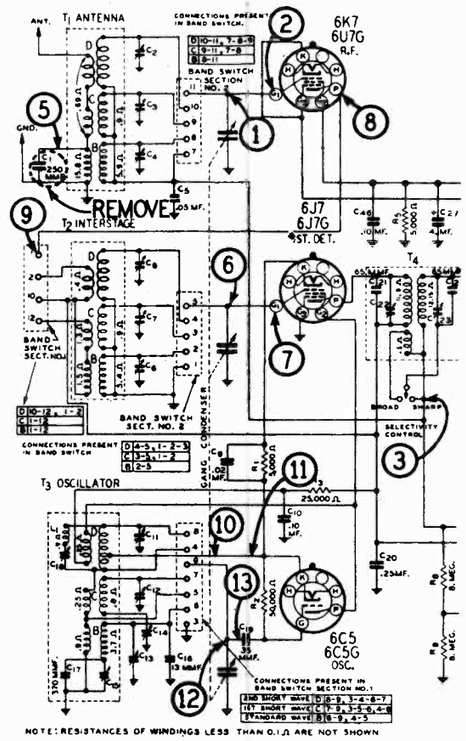

Fig. 11—9 and 11 Tube Schematic Diagram

13 TUBE MODEL-USE ALL 13 WIRES & GROUND LEAD.
9 & 11 TUBE MODELS-CLIP OFF WHITE-BROWN TR. ④ AT SWITCH CONTACT F
7 TUBE MODEL-CLIP OFF THE FOLLOWING WIRES: WHITE-ORANGE TR. ⑥ AT SWITCH CONTACT H; WHITE ⑦ AT SWITCH CONTACT J; YELLOW ⑧ & RED & WHITE ⑨ AT CONDENSER TERMINAL STRIP. TR3 20000 OHM RESISTOR IS NOT USED.
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Fig. 12—Table of Tuning Panel Leads Used

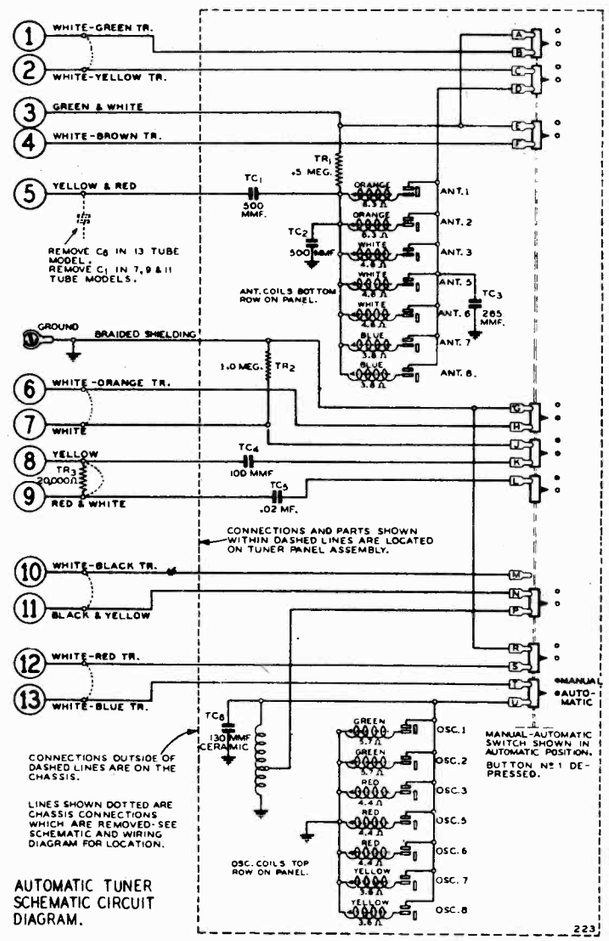

Fig. 13—Tuning Panel Schematic Diagram

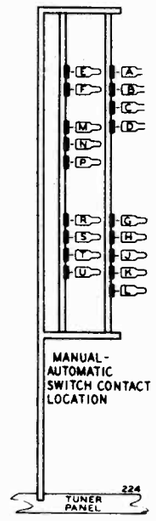

Fig. 14—Tuning Panel Switch Terminals

9 AND 11 TUBE RADIOS