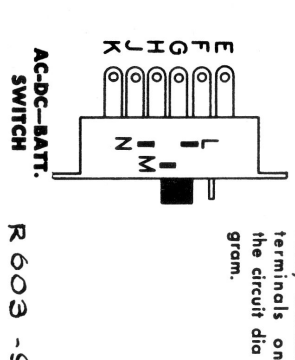


**STAGE GAIN MEASUREMENT PROCEDURE**

**REQUIRED INSTRUMENTS:** The amount of amplification or "gain" of each of the stages of this receiver may be measured with an A.C. Vacuum Tube Voltmeter or a "channel" type instrument containing a tuned and calibrated amplifier.

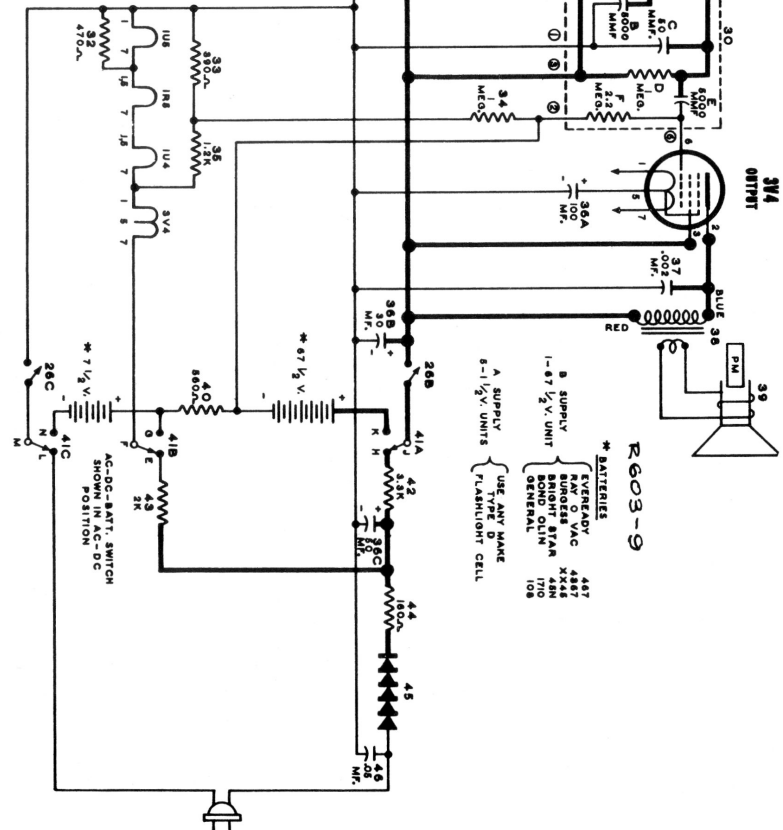
**PROCEDURE:** It is exceedingly important to adhere to the procedure outlined below since the accuracy of these measurements will be affected to a considerable extent by the failure to establish proper operating conditions.

1. Be sure that R.F. and I.F. stages are carefully and accurately aligned by utilizing the alignment procedure.
2. Connect Signal Generator as shown below.
3. The values of stage gain which are given here were measured with a fixed bias of 1½ volts on the control grids of all R.F. and I.F. tubes which are connected to the A.V.C. circuit. Therefore, these values are not intended to indicate the full capability of a stage but they will serve as a convenient basis for determining proper operation. In order to duplicate the fixed bias voltage, connect the negative terminal of a 1½ volt battery to A.V.C. at frame of gang condenser and connect the positive battery lead to B—in receiver chassis.
4. Set Signal Generator for operation at 600 Kc. with 400 cycle modulation and carefully tune peak output. If a local station interferes, set generator to a nearby frequency and re-tune the receiver.
5. R.F. and I.F. circuits are slightly de-tuned when contact is made with an instrument probe and this action, which is indicated by a change in the output meter reading, may seriously affect the gain measurement. Therefore, it is important to adjust the associated circuit trimmer for a maximum output meter reading and to set the input signal level to a convenient reference point on the gain measuring instrument while the probe is making contact. After removing the probe it is again necessary to adjust the trimmer so as to obtain the same output meter reading and thereby assure that a result of circuit de-tuning.
6. When using a "channel" type instrument, carefully tune it for maximum output at desired frequency before making measure-



Lettered terminals in illustrations correspond to similarly lettered terminals on the circuit diagram.

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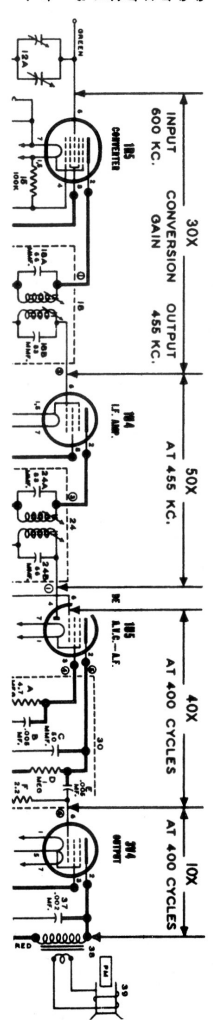


**SPEAKER:**

4 inch P.M. Dynamic  
Voice coil impedance—3.2 ohms

**POWER OUTPUT:**

Undistorted—60 milliwatts  
Maximum—110 milliwatts

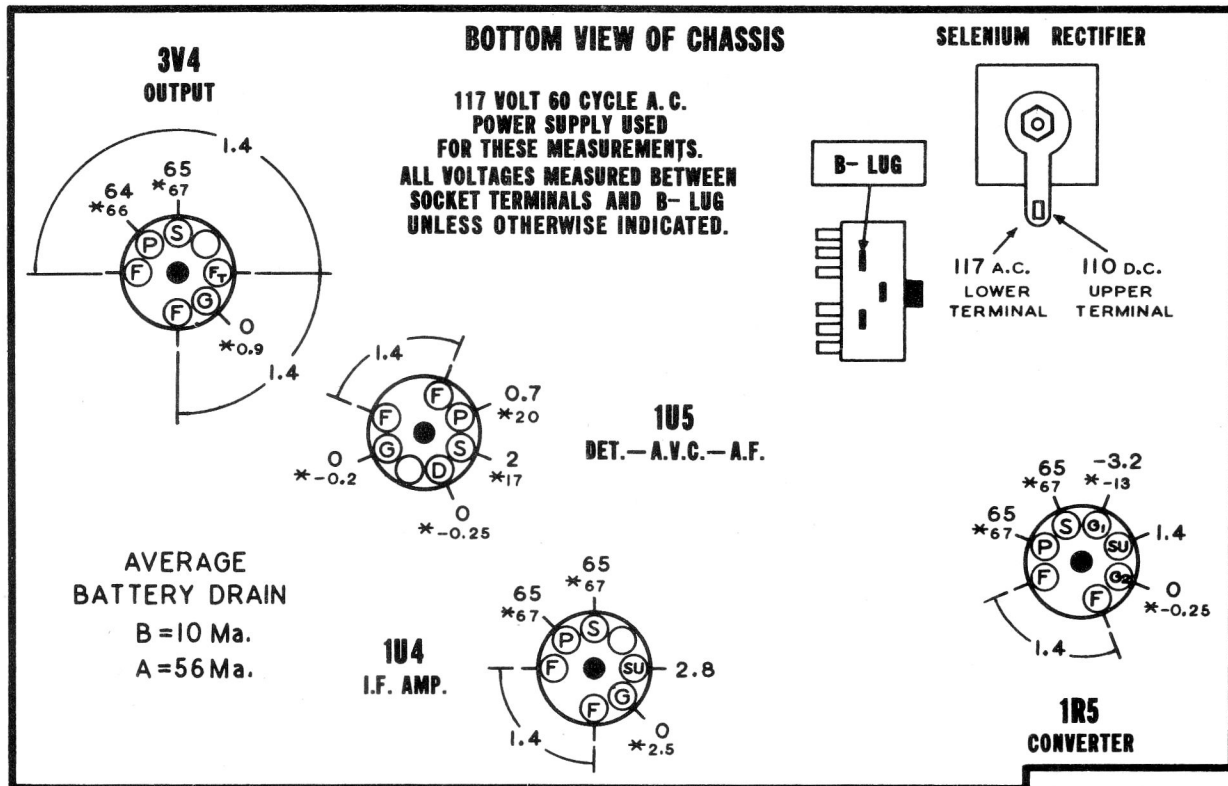


## SOCKET VOLTAGES

### THE VOLTAGES SHOWN IN THIS CHART WERE MEASURED UNDER THE FOLLOWING CONDITIONS

1. Power supply—117 V. 60 cycles, A.C.
2. All voltages were measured between socket terminals and B— unless otherwise indicated on the chart.
3. All measurements were made with a voltmeter having a sensitivity of 1000 Ohms per volt except where indicated by (\*).
4. Receiver should be tuned to 540 KC.
5. Loop antenna terminals should be shorted together.
6. The volume control was set to maximum position with no signal.

The (\*) symbol designates a vacuum tube voltmeter measurement.



### HOW TO REMOVE CHASSIS FROM CABINET

1. Remove volume and the dual tuning knobs by pulling them forward.
2. To remove cabinet back first swing handle outward and note finger grip recess at back edge of cabinet. Grasp back at this recess and pull outward until it is free. Disconnect leads to loop antenna by slipping pin type connectors out of the electrical clips attached to loop.
3. Loosen set screw in hinge pin collar. Then, push hinge pin into one end of handle and withdraw it completely by pulling out of the other end.
4. Remove three chassis mounting screws, two of which are located along one edge and the other located on the opposite edge. To gain access to one of the chassis mounting screws it will first be necessary to remove "A" battery hold down plate as instructed on label attached to this plate.
5. Chassis is now free and may be lifted out of cabinet.
6. Bottom cover on chassis may be removed by taking out three screws at the sides.

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### ALIGNMENT PROCEDURE

1. Remove chassis from cabinet by following procedure described on page 74. Reconnect loop antenna leads to clips on cabinet back. As battery position slightly affects R.F. alignment, it is preferable to have batteries in proper place during this procedure.
2. Replace dial scale and tuning knob on shafts of the gang condenser.
3. Since the "position indicator" for the dial scale is an integral part of the cabinet, it becomes necessary to install a temporary pointer when the chassis is removed from the cabinet. This can readily be accomplished by securing a piece of heavy wire under the chassis bottom cover mounting screw and then shaping the free end of the wire so that it can be placed in a vertical position directly in front of the dial scale. The dial scale should be installed on the gang condenser shaft so that when the con-

denser is fully meshed the smaller 5 of the 55 on the scale is directly under the pointer.

4. In order to provide a coupling for the signal generator during R.F. alignment, wind several turns of wire in a circular shape so that it may be placed adjacent and parallel to the loop antenna. Position cabinet back so that loop antenna is in approximately the same position as when receiver is completely assembled.
5. Solder approximately 5 in. of insulated wire to each of "soldering lugs" on secondary of output transformer. Connect output meter to these extension leads.
6. Set volume control at maximum and use a weak signal from the signal generator.
7. Operate the receiver from a 117 V. AC or DC line.

SIGNAL GENERATOR CONNECTIONS		SIGNAL GENERATOR FREQUENCY	RECEIVER DIAL SETTING	TRIMMER OR SLUG NUMBER	TRIMMER DESCRIPTION	TYPE OF ADJUSTMENT
CONNECT HIGH SIDE OF SIGNAL GENERATOR TO	CONNECT GROUND LEAD OF SIGNAL GENERATOR TO					
Lug on trimmer #6 at side of gang (see chart below for location of trimmer).	B—lug in chassis.	455 KC	Any point where it does not affect the signal.	1 and 2	2nd I.F.	Adjust for maximum output. Then repeat adjustment.
	<b>CAUTION</b> If your signal generator is designed with an AC-DC type power supply, connect ground lead of signal generator to receiver through a .25 Mfd. condenser.			3 and 4	1st I.F.	
Connect directly to coupling turn. See Step 4 above for instructions on coupling loop.		1400 KC	1400 KC See Step 3 above for instructions on how to obtain this calibration point.	5	Broadcast Oscillator	Adjust for maximum output.
<p><b>IMPORTANT:</b>—Before undertaking alignment of the antenna circuit it is necessary to reassemble the chassis in the cabinet. When reinstalling cabinet back be sure that extension leads previously soldered to secondary of output transformer extend through ventilation slot on edge of</p>						
Connect directly to coupling turn. See Step 4 above for instructions on coupling loop.		1400 KC	Tune to 1400 Kc. generator signal.	6	Broadcast Antenna	Adjust for maximum output.
<p>Open cabinet back and unsolder two extension leads attached to secondary of output transformer.</p>						

back. Now, replace back and be sure that it snaps into proper position. To gain access to antenna trimmer #6 it will be necessary to first lift off the snap button at bottom of cabinet. Now complete the alignment procedure as follows.

