PART II

Problems Arising in A.C. Operation of Radiola 28

(1) VOLTAGE READINGS

The following are the voltages obtained at the Catacomb terminal strip, when tests are taken across the terminals indicated in the text test table. A high resistance voltmeter of at least 600 ohms resistance per volt or the No-Current Voltmeter described in Section 3, Part III, of these notes should be used. The allowable variation plus or minus is approximately 5 volts.

VOLTAGE READINGS OF RADIOLA 28

Taken at Catacomb Terminal Strip—Count Terminals from Left to Right When Facing Radiola 28

Terminals	*Correct Effect*
1 to 21	Should measure 31 volts, normally with all Radiotrons lit and battery setting near "Off." Positive terminal of voltmeter on No. 1.
1 to 10	Should measure 21.5 volts normally. Positive terminal of voltmeter to No. 10.
10 to 11	Should measure 41 volts normally. Positive terminal of voltmeter to No. 11.

(2) CATACOMB AND PANEL CONTINUITY TESTS

The following tests will show complete continuity for both external and internal connections of the catacomb. Terminal numbers refer to terminals on Catacomb terminal strip, counting from left to right when facing front of Radiola 28. (Figure 4.)

Both filament control and volume control rheostats should be adjusted so that half the resistance is in the circuit, the loop removed and the cable disconnected from the terminal strip at the rear of the catacomb.

A pair of headphones with at least 4½ volts in series or a voltmeter with voltage to give full scale deflection when connected directly across battery terminals should be used in making this test. This arrangement will be found to be very sensitive in checking voltage drop in various circuits.

Any failure of a circuit to meet the above tests will indicate a defective catacomb which should be replaced with one of known operating condition.

CATACOMB TESTS (Condensers)

The Radiotrons, Cable and Loop Are to Be Removed

Terminals	*Correct Effect*	*Incorrect Effect Caused by:*
P6 to +6	Open	Shorted cond. No. 3 or No. 4
9 to P2	Open	Shorted catacomb neutralizing condenser
9 to G6	Open or very faint	Shorted grid condenser
14 to 11	Open	Shorted cond. No. 1

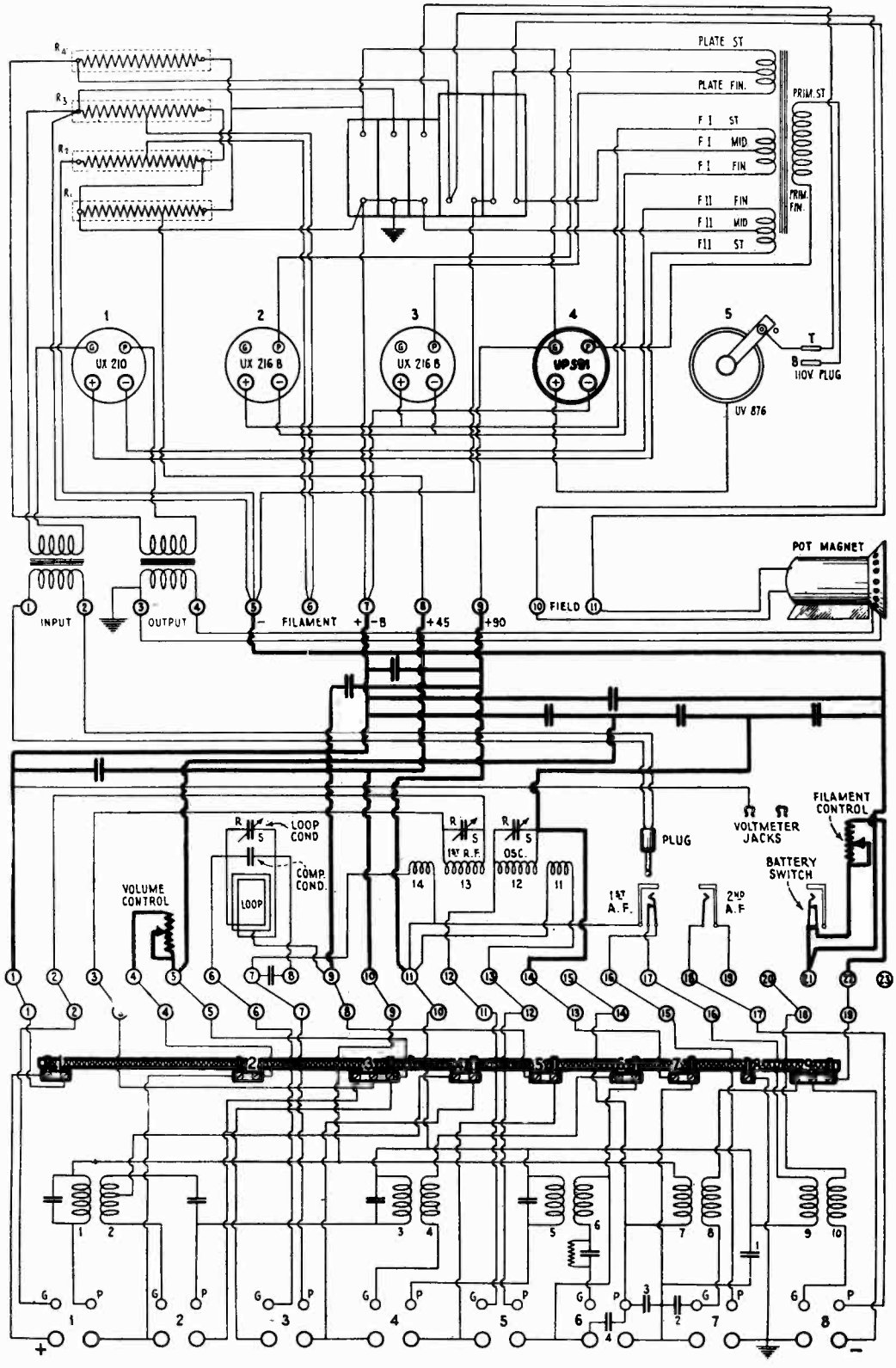

Figure 4—Radiola 28 A.C. operated continuity circuit diagram

CATACOMB TESTS (Coils and Connections)

The Radiotrons, Cable and Loop Are to Be Removed

Terminals	*Correct Effect*	*Incorrect Effect Caused by:*
2 to G1	Closed	Open connection
6 to G3	Closed	Open connection
7 to P3	Closed	Open connection
9 to G2	Closed	Open ½ coil No. 2 or resistance strip
9 to G4	Closed	Open coil No. 4 or resistance strip
10 to P1	Closed	Open coil No. 1
10 to P6	Closed	Open coil No. 7
11 to P2	Closed	Open coil No. 3
11 to P4	Closed	Open coil No. 5
11 to Terminal No. 17	Closed	Open coil No. 9
12 to G5	Closed	Open connection
13 to P5	Closed	Open connection
16 to P7	Closed	Open connection
18 to P8	Closed	Open connection
20 to G8	Closed	Open coil No. 10
22 to G7	Closed	Open coil No. 8

PANEL TESTS

With Radiotrons, Cable, Loop and Resistance Strip Removed

Terminals	*Correct Effect*	*Incorrect Effect Caused by:*
3 to 2	Closed	Open R.F. coil
5 to 4	Closed	Open volume control
11 to 7	Closed	Open R.F. coil
13 to 11	Closed	Open oscillator coil
14 to 12	Closed	Open oscillator coil
16 to 11 (With shorted telephone plug in 1st stage jack)	Closed	Defective 1st stage jack
17 to 16 (With no telephone plug in 1st stage jack)	Closed	Defective 1st stage jack
22 to 21	Closed	Open filament control

PANEL TESTS (Condensers)

Loop Removed

Terminals	*Correct Effect*	*Incorrect Effect Caused by:*
8 to 6	Open	Shorted loop or compensating cond.
8 to 7	Open	Shorted neutralizing condenser

(3) RESISTANCE STRIP TESTS

listed below:

RADIOLA 28 A.C. RESISTANCES

The method described in Section 3, Part I, of these notes should be used in checking the value of the various resistances of the resistance strip.

The values in ohms of the various resistances in the Radiola 28 resistance strip are

Count Terminals from Left to Right When Facing Radiola 28

Terminals	*Lower Limit*	*Normal*	*Upper Limit*
1-2	185	190	195
*2-3	350	400	450
3-4	158	163	168
4-5	150	155	160
5-6	125	130	135
6-7	116	120	124
7-8	111	115	119
8-9	45	50	55

* On some models section No. 2 of the resistance strip has been left open. When this is done the volume control is of 187.5 ohms resistance instead of 375 ohms as used when the strip is not open.

Another series of resistance values with a 250-ohm Volume Control found in some models of Radiola 28 is given below:

Terminals	*Lower Limit*	*Normal*	*Upper Limit*
1-2	260	271	282
2-3	Open	Open	Open
3-4	230	236.5	243
4-5	191	197	203
5-6	176	183.5	191
6-7	146	154.5	163
7-8	137	145.5	154
8-9	45	50	55

All resistance strips are interchangeable, provided the volume control has the correct value for the strip used. This is of utmost importance as the Radiola will not function properly when the volume control and resistance strip are not correct.

(4) CHANGES IN FACTORY BUILT A.C. RADIOLA 28

The following changes in connections and parts apply to factory built A.C. Radiolas 28 as distinguished from battery operated Radiolas 28 converted to A.C. operation.

Whisker 16 is connected to terminal 19 instead of terminal 17.

The condenser cable has an additional connection.

The output of the Radiola is taken direct from the terminal strip at the rear of the catacomb and the plug is not used in the first stage jack.

The filament switch voltmeter pin jacks and second audio stage phone jack are also omitted.

The instruction book accompanying the receiver refers to these changes and should be consulted when servicing this particular model of Radiola 28.