THE PATHFINDER

For Sparton Radio Dealers

Number 10

Service Data Measurements for Sparton Equasonne Receivers

The regular cable strip test for the Model 109 is identical with that of other models. The preliminary voltage test of the 109 should follow the outline of the Models 69 and 79 as of previous bulletin. Failure to obtain required values in this test indicates trouble possibly in the converter or connector unit The terminals of the connectors are numbered as shown:

B.	A.
Connector unit.	1. Detector +
Phono pickup jack.	2. R. F. +
	3. Heater
	4. Heater
	5. Ground of Converter

Readings with converter operating and volume set at maximum.

A. 1—5 150-250 volts.
A. 2—5 90-140 volts.
A. 3—4 2.5 volts AC—2.9 volts AC.

If voltages above are obtained from converter cable tips while disconnected, connect converter cable back on terminal "A", and if required test values are not obtained on terminal strip "B" according to previous bulletin, the trouble is in the connector unit.

If while disconnected from strip "A", the converter cable does not obtain the above readings further investigation should be made regarding the converter.

Test of Converter:

Cable disconnected from strip "A"—converter operating:

Test voltage from rectifier filament to ground (450 volts approximately). Preliminary—no voltage—defective rectifier.

Test continuity of converter ground lead—voltage read indicates rectifier okey.

No voltage 1-5 indicates open detector + circuit.

Cause: Open 50,000 ohm or 20,000 ohm resistance or choke or broken connection in DC supply from rectifiers. Test for field voltage across speaker field (2 blue leads to 4 terminal strip on speaker baffle). Voltage here of approximately 200 volts indicates that rectifiers are operating satisfactorily. The lack of detector plate voltage (1-5) may then be due to open circuit of input audio transformer primary. The continuity of this winding may be checked by the test kit on the 7.5 volt scale in series with a small battery (4.5 volt "C" battery is sufficient). Test this with converter disconnected from the 110-volt mains. Test between No. 1 cable tip and converter ground. This test may be made with test meter on 15 m.a. scale (for greater sensitivity). No reading indicates open circuit in transformer primary winding.

No voltage 2-5 indicates open circuit in the speaker field circuit. Test by breaking speaker field connection at strip on baffle and noting whether or not an arc occurs. If no arc occurs the field is open or a poor connection at the terminal strip is probably the cause, if a voltage is indicated (it is 200 volts) across the terminals of the field. If no voltage is obtained trouble lies in 7,000 ohm resistance.

If voltages are satisfactory in value and no signal results, test as follows with converter not operating.

Output Transformer Continuity:

Primary—Amplifier plates (both—one at a time) to a rectifier filament terminal.

Secondary—Across leads to speaker piston coil connections with speaker disconnected.

Input Transformer Continuity:

Secondary—Amplifier grids (both—one at a time) to ground.

Primary—No. 1 cable tip to converter ground.

Choke Coil Continuity:

Rectifier filament to amplifier plate.

Converter Operating:

Excessive heating of rectifier plates and low voltage readings indicate too great a load on rectifier.

Cause: Ground of positive lead due to poor insulation —poor insulation in chokes or punctured condenser block or defective amplifier tube.

If a signal is received and a blocking or stuttering effect is noted accompanied by excessive heating of the 900 ohm resistance it is caused by open amplifier grid circuit. This can be checked by the test kit plug in extension used in one of the amplifier sockets. The normal plate current is from 25 to 40 m.a. per tube. When grid circuit is open excessive current to 80 m.a.. will be present.

Using the test kit plug-in feature in the A.F. amplifier sockets, the following voltages are normal:

Filament: 6.7 volts—7.5 volts.
Plate voltage: 300 volts—380 volts.
Plate current: 35—40 m.a.
Grid Bias: 46—70 volts.

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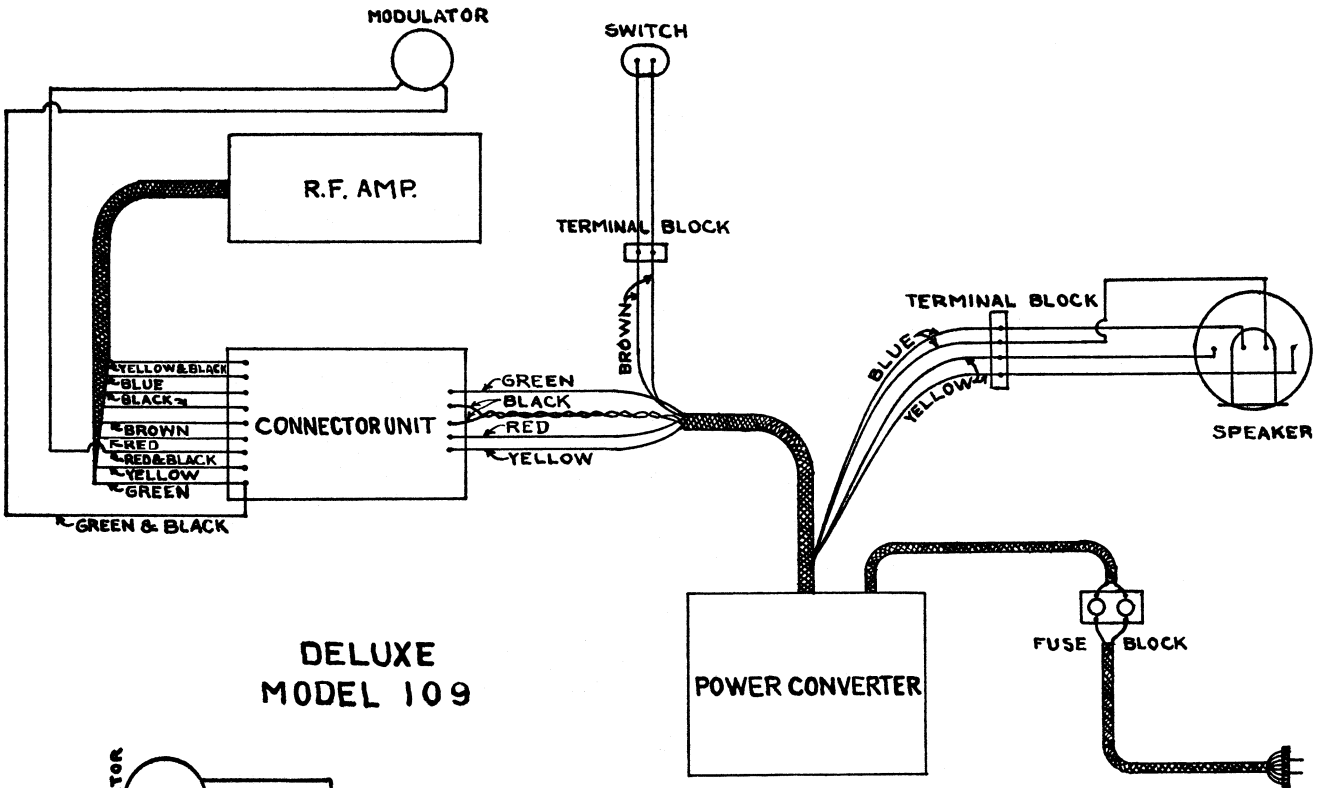
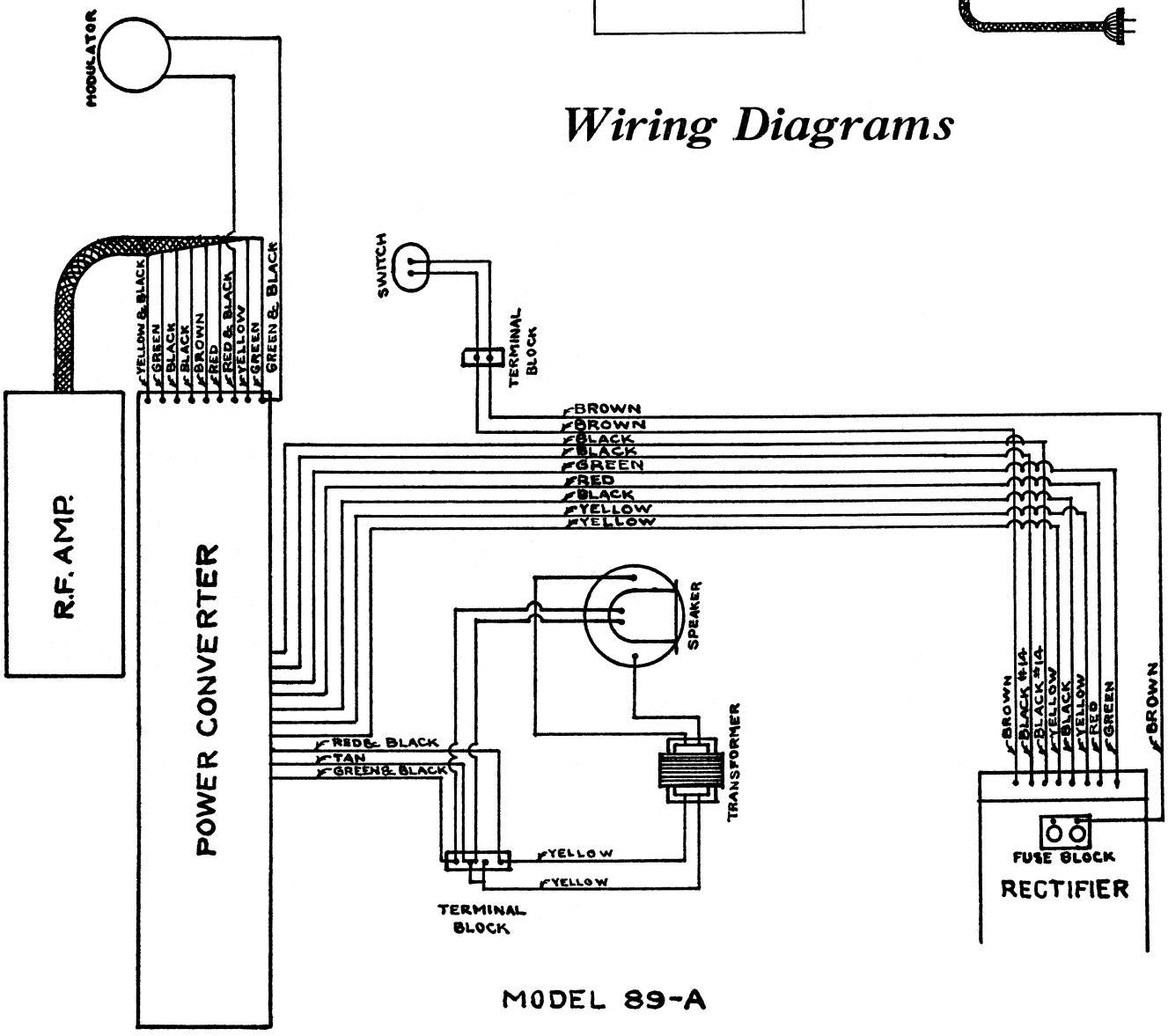


DELUXE
MODEL 109

Wiring Diagrams



MODEL 89-A