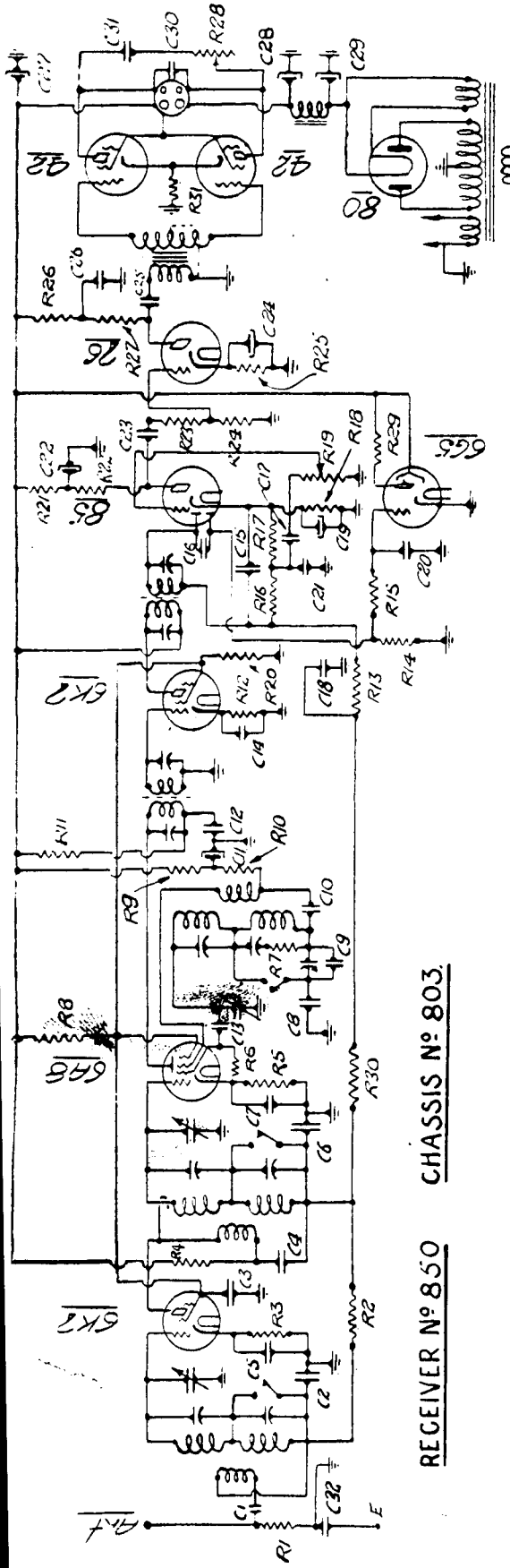
"Airzone" A.C. Dual-Wave Console and Radiogram Model 803/850



C1 - .01 μf 400V.Tub.
C2 - 2000 μμf mica
C3 - .1 μf 400V.Tub.
C4 - 2000 μμf mica
C5 - .02 μf 400V.Tub.
C6 - 2500 μμf mica
C7 - .02 μf 400V.Tub.
C8 - 1225 μμf mica
C9 - 400 μμf mica
C10 - 1000 μμf mica
C11 - 8 μf elect.440V.W.
C12 - .1 400V.Tub.
C13 - 100 μμf mica
C14 - .1 μf 400V.Tub.
C15 - 100 μμf mica
C16 - 50 μμf mica
C17 - .02 μf 400V.Tub.
C18 - .02 μf 400V.Tub.
C19 - .1 μf elect.25V.W.
C20 - .05 μf 400V.Tub.
C21 - 100 μμf mica
C22 - 8 μf elect.440V.W.
C23 - .02 μf 400V.Tub.
C24 - 10 μf elect.25V.W.
C25 - .5 μf 400V.Tub.
C26 - .5 μf 400V.Tub.
C27 - 8 μf elect.500V.W. } Dual
C28 - 8 μf elect.500V.W. }
C29 - 8 μf elect.500V.W.
C30 - 1000 μμf mica
C31 - .02 400V.Tub.
C32 - 5000 μμf mica

R1 - 10 K.Ω ½W.
R2 - .1 M.Ω ½W.
R3 - 500 Ω ½W.
R4 - 10 K.Ω ½W.
R5 - 460 Ω P.Type
R6 - 50 K.Ω ½W.
R7 - 125 Ω ½W.
R8 - 10 K.Ω 2W.
R9 - 5 K.Ω ½W.
R10 - 10 K.Ω P.Type
R11 - 5 K.Ω ½W.
R12 - 300 Ω ½W.
R13 - 1 M.Ω ½W.
R14 - 1 M.Ω ½W.
R15 - .5 M.Ω ½W.
R16 - .1 M.Ω ½W.
R17 - .5 M.Ω ½W.
R18 - 1700 Ω P.Type
R19 - .5 M.Ω V.C.
R20 - 30 K.Ω 1W.
R21 - 20 K.Ω ½W.
R22 - 50 K.Ω ½W.
R23 - .25 M.Ω ½W.
R24 - .25 M.Ω ½W.
R25 - 3500 Ω P.Type
R26 - 20 K.Ω ½W.
R27 - 50 K.Ω ½W.
R28 - 50 K.Ω T.C.
R29 - 1 M.Ω ½W.
R30 - .1 M.Ω ½W.
R31 - 200 Ω Wire/W.

Airzone model "850" is an eight-valve receiver designed for dual-wave coverage and operation from 200-250 volts A.C. mains. This receiver is of the console type and is fitted with a large, circular edgelit dial, a tuning indicator, and five controls. These controls are for noise suppression (not shown on diagram), tuning, wave-change (two positions), volume, and tone (continuous). The tuning indicator is a type 6G5 "magic eye," and the loudspeaker is a 12-inch unit with a field coil resistance of 600 ohms. The chassis type number of this model is "803," and the same chassis will also be found fitted to a radio-gramo. combination which bears the same model number as the "radio only" product. This model was marketed during 1936.

The design of this receiver is basically the same as that of model "660" (chassis type "615," see 1938 R.T.A., page 239), the major point of difference being found in the use of a push-pull output stage, with associated driver stage, instead of a single pentode. Before saying anything about the circuit arrangement, however, it is important to note that the "noise suppressor" arrangements have been omitted from the diagram. This device consists of an extra 5,000 ohms resistor connected in series with the R.F. valve cathode resistor (R3), and a simple short-circuiting switch wired so that the extra resistor may be cut out of circuit at will. The effect of the device is merely to reduce the sensitivity of the receiver (by the application of extra bias to the R.F. valve), and so reduce interstation noise whilst tuning local stations. It should be noted that the R.F. cathode by-pass condenser (C5) is still returned direct to earth.

The most noteworthy feature of the "803/850" circuit arrangement is the extreme simplicity of the band-switching system. As can be seen, common coupling coils are employed for each pair of tuned circuits and, moreover, the S.W. and B.C. grid coils are wired in series. This last permits of band-changing by merely shorting the broadcast coils. The arrangement of the tuned circuits is most ingenious, but differs so much from "standard" practice that servicemen will be well advised to study the arrangement carefully before attempting alignment or any other service operation involving the "radio" circuits.

Apart from this, the circuit arrangement is fairly straightforward. Points to watch are the absence of A.V.C. on the I.F. amplifier grid; the exclusive use of the second 85 diode for developing 6G5 control voltage; the 75 grid input voltage divider (R23, R24); the shunt-fed A.F. transformer primary; the internally-earthed transformer secondary C.T.; and the use of a filter choke to provide initial power supply filtration.

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Operating Voltages

The following measurements were made with a "1,000 ohms per volt" meter between chassis and the socket contact indicated. The "noise suppression" switch was adjusted to its "off" position (minimum 6K7 bias), and the receiver was tuned to a point where no signal was audible.

6K7, R.F. Amplifier: Plate, 180 v.; screen, 85 v.; cathode, 4 v. Plate current, 5mA.

6A8, Frequency Converter: Plate, 210 v.; screen, 85 v.; cathode, 4.5 v.; osc. anode grid, 180 v. Plate current, 4.5 mA.; osc. anode current, 3.5 mA.

6K7, 456 kC. I.F. Amplifier: Plate, 235 v.; screen, 85 v.; cathode, 2.5 v. Plate current, 6mA.

85, Detector, A.V.C. Rectifier, Indicator Control Rectifier, and A.F. Amplifier: Plate, 70 v.; cathode, 3.5 v. Plate current, 2.2 mA.

76, A.F. Driver: Plate, 110 v.; cathode, 6 v. Plate current, 1.75 mA.

42 (two), Push-Pull Output Pentodes: Plates, 225 v.; screens, 235 v.; cathodes, 13 v. Plate current (each), 27 mA.

6G5, Tuning Indicator: Target is fed direct from 235 v. supply and triode plate is fed from target through 1 megohm resistor.

SPECIAL NOTE: The above data were published previously on page 24 of "Radio and Electrical Retailer" dated December 2, 1938, but are now repeated for the benefit of new readers and also to simplify reference.