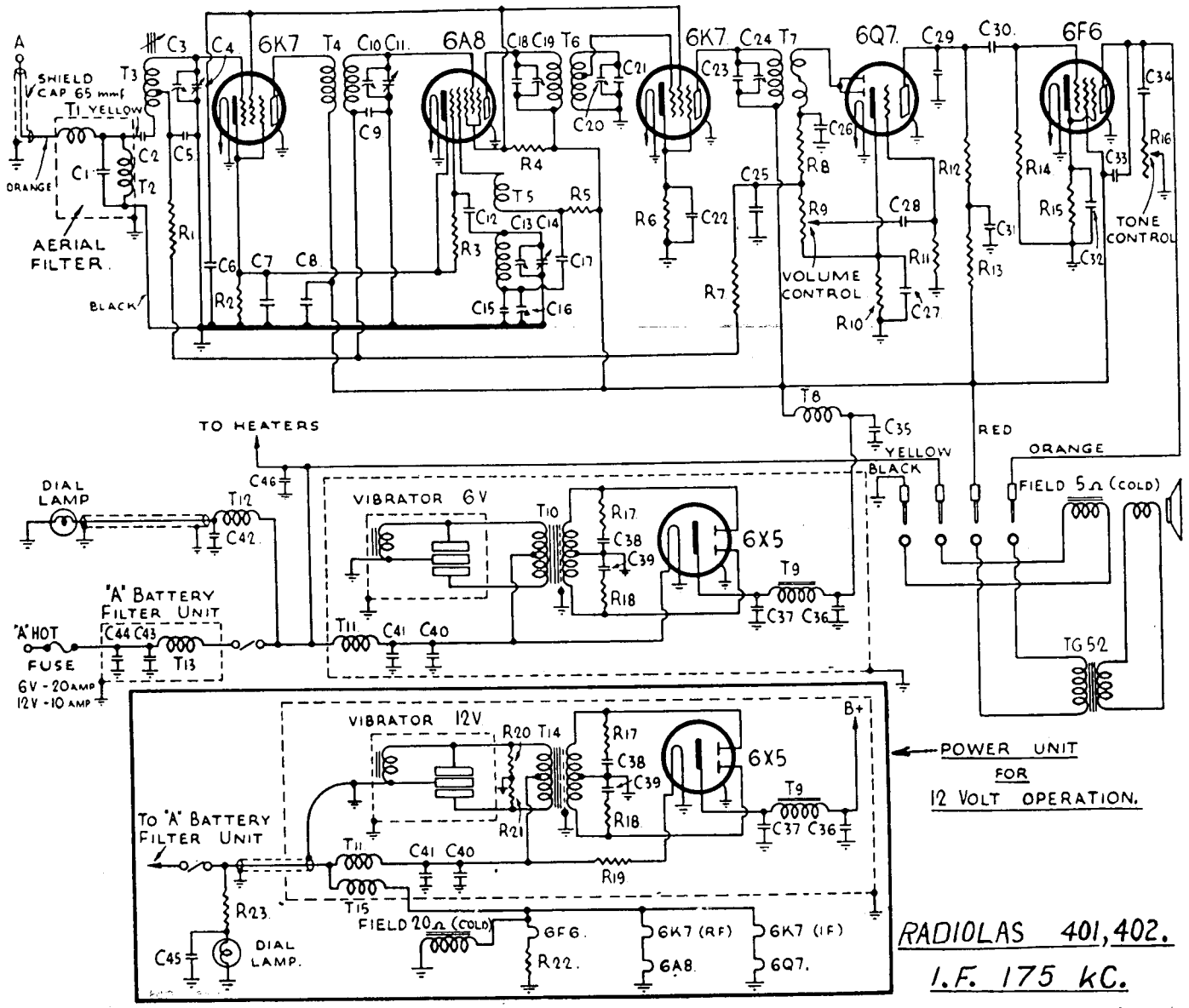
"Radiola" 6v. & 12v. Auto. Radio Models 401 and 402



RADIOLAS 401, 402.

I.F. 175 kC.

Radiola models 401, 402 are 6-valve automobile receivers designed for B/C. coverage and operation from either a 6-volt or 12-volt power supply. These models are identical except for the fact that model 402 employs a separate loudspeaker mounted in a "Header Unit," which may be installed in any convenient position within the car, whereas in model 401 the speaker is an integral part of the receiver unit. Operation from a 12 v. supply does not involve any serious alterations, and these can be seen on reference to the circuit diagram.

Since the problems encountered in servicing automobile radios are somewhat different to those met with in the ordinary service field, and since most of these problems arise from electrical interference caused by the car itself, a short description of some of the more common sources of interference, and their remedies, in models

(Continued on facing page)

COMPONENT VALUES

The numbers in parenthesis following component indices are manufacturer's part numbers.

RESISTORS.

R1, R14—500,000 ohms, ½ W.; **R2**—150 ohms, ½ W.; **R3**—60,000 ohms, ½ W.; **R4**—30,000 ohms, ½ W.; **R5**—20,000 ohms, 1 W.; **R6**—2,000 ohms, ½ W.; **R7, R11**—1.75 megohms, ½ W.; **R8**—100,000 ohms, ½ W.; **R9** (3058)—300,000 ohms, volume control; **R10**—4,000 ohms. ½ W.; **R12**—200,000 ohms, ½ W.; **R13**—50,000 ohms, ½ W.; **R15**—500 ohms, 1 W.; **R16** (3163)—100,000 ohms, variable, tone control; **R17, R18**—50 ohms, ½ W.; **R19** (3073)—10 ohms, w.w.; **R20, R21**—100 ohms, 1 W.; **R22** (3071)—8 ohms, w.w.; **R23** (3075)—24 ohms, w.w.

CONDENSERS.

C1—25 mmfd. (M), mica; **C2**—0.01 mfd., paper; **C3, C10, C13**—5/30 mmfd., mica, coil trimmers; **C4, C11, C14** (3021)—sections of 3-gang variable; **C5, C9, C17, C35**—2,200 mmfd., mica; **C6, C7, C8, C22, C31**—0.1 mfd., paper; **C12**—50 mmfd. (D), mica; **C15** (3042)—520 mmfd., mica, padder shunt (part of padder assembly); **C16** (3042)—5/60 mmfd., mica, padder; **C18, C21**—85 mmfd. (E), mica, I.F.T. trimmer shunts; **C19, C20, C24**—10/50 mmfd., mica, I.F.T. trimmers, **C23**—70 mmfd., mica, I.F.T. trimmer shunt; **C25**—110 mmfd., mica; **C26, C46**—350 mmfd., mica; **C27, C32**—25 mfd., 25 v., electro; **C28, C30, C34**—0.02 mfd., paper; **C33**—0.005 mfd., paper; **C36, C37**—8 mfd., 500 v., electro; **C38, C39**—0.02 mfd., 2,000 v., paper; **C40, C43**—0.5 mfd., paper; **C41, C42, C44, C45**—250 mmfd., mica.

COILS, ETC.

T1, T2 (3041)—aer. filter chokes; **T3** (3024)—aer. coil; **T4** (3026)—R.F. coil; **T5** (3028)—osc. coil; **T6** (3031)—175 kC., 1st I.F. transformer; **T7** (3034)—175 kC., 2nd. I.F. transformer; **T8** (3036)—high-tension R.F. choke; **T9** (3062)—high-tension smoothing choke; **T10** (3060)—vibrator transformer, 6 volt type; **T11** (3149)—low-tension R.F. choke; **T12** (3037)—dial lamp R.F. choke; **T13** (2501)—low-tension R.F. choke, part of "A" battery filter unit **T14** (3065)—vibrator transformer, 12 volt type; **T15** (2977)—heater circuit low-tension R.F. choke; **"A" battery filter unit**—3048.

Radiola Models 401 & 402 (continued)

401 and 402 will be given for the benefit of those servicemen with little or no experience in this branch of the radio art.

To begin with the aerial lead-in should be effectively shielded with low-capacity braid, regardless of the type of aerial employed, and care should be taken that the shielding is connected to the car frame as close to the aerial as possible.

Interference caused by the car engine should be localised by first disconnecting the aerial. At the connector nearest the receiver, and if the interference does not stop after this has been done, it is entering the receiver via the battery cable or control shafts. Make certain that the station selector flexible shaft is not touching the tuning condenser spindle; the insulated coupling on the condenser spindle is provided to prevent noise entering the receiver at this point.

Badly worn or burned "breaker" points, also a defective or leaky distributor condenser may cause interference.

Another source of interference has been traced in some cars, to low and high tension leads being run in the same lead duct. In extreme cases it may be necessary to shield the low tension lead, taking care to effectively "earth" the shield.

Cars having the motor mounted on rubber must have the motor bonded to chassis at one point, using copper braid at least ¾in. wide. Be sure to allow sufficient "slack" to take care of engine vibration.

If noise is present when the aerial is connected but disappears when the aerial is disconnected, it is obvious that it is being picked up by the aerial itself. Under these conditions the dome-light filter should be examined to ascertain whether it has been properly connected. If this is all right and noise persists, it can usually be eliminated by by-passing, with a 0.5 mfd. condenser, various points in the electrical system such as windscreen wiper, petrol pump, horn, stop-light, ignition switch, head lamps, park lights, cigarette lighter, heater, petrol and oil gauges, etc.

It should be noted that a remedy effective on one car may not be on another of the same make and model. Noise suppression is largely a matter of elimination, and if the above suggestions are followed there should be no difficulty in eliminating interference coming from the car itself. It may, in very stubborn cases, be necessary to bond all the control wires and rods to the bulkhead where they pass through to the driving compartment. Make sure that the bonnet is securely clamped to prevent radiation from the engine compartment.

Should it be desired to adjust the calibration of the control unit, this can be done with the assistance of a small screwdriver inserted in the adjusting screw provided for the purpose. This screw is located at the back of the control unit in the dial lamp receptacle, and adjustment achieved by "tuning in" a known station and turning the screw until the dial indicates the wavelength of the station being received. During this operation the station selector knob should be held firmly to prevent its turning.

401, 402 OPERATING VOLTAGES

The following measurements were made with a "1,000 ohms per volt" meter unless otherwise stated, and voltages are those existing between the socket contact indicated and chassis. The receiver was operating under "no signal" conditions with all controls turned to their maximum clockwise position.

6K7, R.F. Amplifier: Plate, 245 v.; screen, 90 v.; cathode, 3 v. Plate current, 6 mA.

6A8, Frequency Converter: Plate, 245 v.; screen, 90 v.; cathode, 3 v.; osc. anode grid, 165 v. Plate current, 6 mA.

6K7, 175 kC., I.F. Amplifier: Plate, 245 v.; screen, 90 v.; cathode, 6 v. Plate current, 4 mA.

6Q7, Detector, A.V.C. Rectifier, and A.F. Voltage Amplifier: Plate, 90 v.; cathode, 1.5 v. Plate current, 0.7 mA.

6F6, Output Pentode: Plate, 225 v.; screen, 245 v.; cathode, 15 v. Plate current 30 mA.

Battery drain, 7 amperes at 6 v., 4.5 amperes at 12 v.