JULY 29, 1937

OVER THE SOLDERING IRON

CAMDEN, N. J.

PREPARED FOR THE INFORMATION AND USE OF RCA VICTOR DISTRIBUTORS' SERVICE MANAGERS

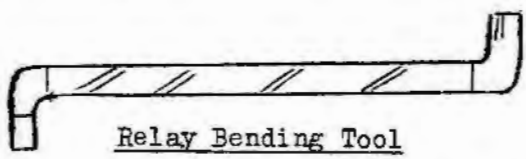
ELECTRIC TUNING MECHANISMS

The larger tuning knob of the Electric Tuning models should not be allowed to rub against the cabinet or bind with the inner knob. This may be avoided by careful installation of the knobs and instruction of the customer. A bind at this point will cause abnormal mechanical noise and may be enough to cause the drive motor to chatter in and out of mesh.

Binding of the lever to which the throw-out gear is attached may occur at the bearing on the tuning shaft assembly, causing the throw-out gear to slip or jump in and out of engagement. The bearing of the lever should be carefully washed out with Carbona or equivalent, and re-oiled plentifully. Work the lever back and forth while cleaning and oiling so that any foreign particles will be removed.

Arcing at the insulating segments of the selector discs will produce a bad interference during "Electric" tuning but which will not be present during "Manual" tuning. The condition will in most cases be due to an accumulation of metallic dust, or graphite grease on the discs. Thorough cleaning of the discs with a cloth and cleaning fluid, polishing with crocus cloth and careful re-lubrication will eliminate the trouble. Only a very slight film of Vaseline or Petrolatum is necessary on the discs. It is best to dampen a cloth with the lubricant and then apply it sparingly.

The tension of the long finger on the short-circuiting switch should not be overlooked in adjusting the mechanism to eliminate poor pull-in or dis-engagement of the motor. This tension becomes somewhat critical with low line voltages; the lower the voltage, the less should be the tension of the switch finger against the rotor shaft. A relay bending tool equivalent to the Automatic Electric Company, Chicago, Illinois, U.S.A. "Tool #7066" will be found handy in bending the fingers of the switch for proper adjustment.



Relay Bending Tool

Packing supports for the Electric Tuning mechanism and chassis must be kept intact when the instrument is re-shipped or handled during local delivery or return. The rear packing rail which secures the chassis rigid with the cabinet is carefully fitted at the factory, through use of variable size spacer blocks, to prevent movement of the chassis when the bolts are made tight. This same caution should be exercised in the field, as heavy jolts may affect adjustments of the tuning assembly.

Slippage of the vernier tuning control at the ends of the dial may be caused by torque required to actuate the reversing switch on the back of the selector disc assembly. The customer should be instructed to use the larger tuning knob to carry the mechanism over the reversing point. This condition occurs only on "Manual" operation and only at ends of the scale.

DIAL CALIBRATION - MODELS 813-K and 816-K

Abnormal variations of dial readings on the 49, 31, 25 or 19 meter spread bands, from the correct frequency, may be caused in some instances by insecure contact at various points in the oscillator circuit. The following points should be carefully checked should this type of trouble be exhibited:-

(1) Poor or intermittent contact of the oscillator section of the range switch. The rotary disc may be loose on the shaft causing insecure and irregular connection. A metal or wooden wedge should be driven between the diec and the shaft to make the two rigid with each other.

(2) Intermittent contact of the metal sleeves or spacers on the support rods of the band switch will upset the ground circuit and produce frequency variations. These should be tightly pinched with a pair of pliers at their ends in order to provide solid contact with the assembly rods.

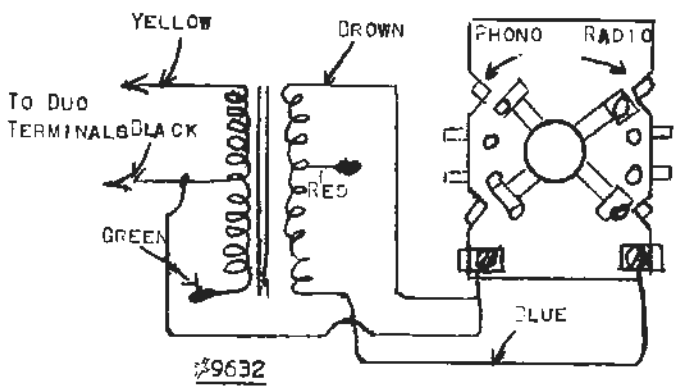
(3) The connection between the feet of the band switch shield partitions and the chassis must be secure. Soldering of the shield to the chassis is effective in eliminating variations of ground circuit at this point.

(4) Vibration of rear end shield partition of the band switch may be causing trouble. A strip of felt, mounted on the chassis shelf directly below the rear partition, to prevent its vibration, will be of considerable advantage.

(5) Variation of r-f potential of band switch shaft and consequent change of circuit constants may be minimized by grounding the inner end of the shaft with a flexible pigtail to the chassis.

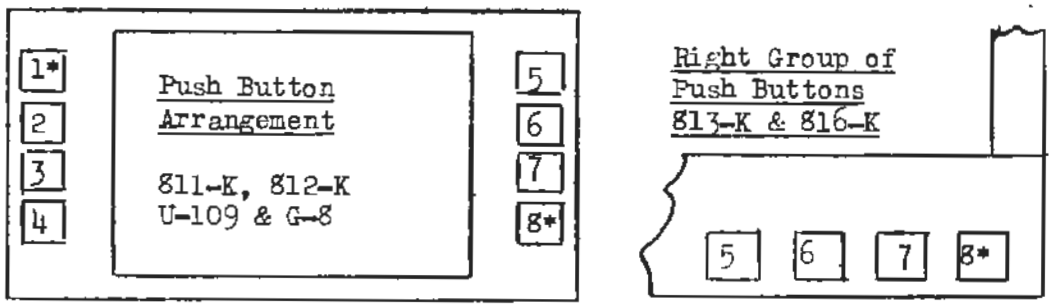
MODELS R-93, R-93-A and R-94
Volume and Fidelity Increase

The pickup unit of these Duo Junior instruments is designed to be adaptable to a great variety of receiver inputs, and to provide the best average of output and fidelity that may be obtained over such a wide range of applications. On some installations, where the ultimate in output and fidelity is desired, it is possible to gain considerable improvement in performance by installation of a Stock #9632 between the "Radio-Phono" changeover switch and the Duo output. This transformer gives a decided step-up in voltage, and enables the Duo volume control to be operated at a lower point so that the full benefit is derived from the tone compensation. The #9632 transformer should be connected as shown in the diagram below, and its placement should be such that it is not in an interfering magnetic field from a power transformer, reactor, wiring or motor. All other connections are to be made per standard instructions. Shielding should be placed over the primary and secondary leads if such is found necessary. If the bias of the receiver audio input stage is affected by the transformer winding, a .05 mfd. in series with the "blue" lead will correct the condition. The "green" lead of the transformer should be taped up and not used.



PUSH BUTTON RELEASE - ELECTRIC TUNING

Provisions are incorporated on the Electric Tuning control buttons for simple release where the entire group of eight have been pushed in and are latched.



When all eight buttons are latched due to error or tampering, it is only necessary to push either the number 1 or number 8 button on the 811-K, 812-K, U-109 or G-8 type; and on the 813-K and 816-K, push the number 8 button. These buttons are asterisked in the above diagrams. In pushing the indicated buttons they must be forced slightly (more than required for tuning) so as to actuate the auxiliary release lever.

MODEL G-8 ARMCHAIR CONTROL

Extra lengths of control cable should not be used where power line voltages are low. The voltage drop in the cable circuit due to the added resistance will reduce the power of the drive motor and prevent correct operation.

AUTOMATIC FREQUENCY CONTROL

The following features of the AFC employed in the new "Electric Tuning" instruments will be of interest to sales personnel in discussing this function, and to servicemen in familiarizing themselves with the circuits involved and their adjustment. These features indicate the main points of superiority of the RCA "Automatic Frequency Control":-

(1) High I-F Stability - The magnetite cores employed the I-F transformers insure correct I-F alignment and consequent accuracy of automatic tuning. Any variation of I-F selectivity curve would cause mistuning of the AFC.

(2) Discriminator Selectivity - Coils having high "Q" due to magnetite cores and Litz wire are used, and provide excellent selectivity, sensitivity and stability in the discriminator, resulting in ability of the AFC to tune nearer to the exact frequency.

(3) Oscillator Stability - The use of magnetite core coils in the oscillator circuits improves its stability, insuring greater precision in tuning to the desired frequency. The use of the stabilized type of oscillator circuit with cathode tap on tuned circuit, prevents variation of frequency with power line changes.

MODELS 813K and 816K CIRCUIT CHANGE

Resistor R-42 having a value of 1.8 ohms, and connected in series with the indicating window pilot lamps is being omitted in future production and replaced by a direct jumper connection. Where it is necessary to service chasses containing this resistor it should be removed and a jumper added.

OSCILLATOR STOPPAGE OR INTERMITTENCY
Models 811-K and 812-K

Where trouble develops on these receivers due to lack of oscillation on "A" band, or intermittent variation of sensitivity, capacitors C-5 and C-49 should be carefully checked for leakage or short circuit. A d-c voltage in the order of 500 should be applied to these parts as a check for breakdown.

POWER FREQUENCY RATINGS - ELECTRIC TUNING MODELS

Instruments having the Rating "A" stamp will operate in the 105 - 125 voltage range, and only at power line frequency ratings from 50 - 60 cycles.

Instruments having the Rating "B" stamp will operate only at 105 - 125 volts, 25 cycles.

Instruments having the Rating "C" stamp will operate in the 115/150/220 voltage range and only at power line frequency ratings from 50 to 60 cycles.

REDUCTION OF BACKGROUND HISS
Models 8BT, 8BK, 8BT6 & 8BK6

The excellent fidelity and high sensitivity incorporated in the design of these instruments accounts for the reproduction of an unfavorable hiss or background noise in localities where signal strengths are limited. Response to such hiss between stations on the dial is normal due to increased sensitivity from automatic volume control, and the presence of noise at such points should not be considered objectionable. If however, the hiss or noise is of abnormal level when tuned to a station, a reduction may be obtained by applying one or more of the following service measures:

(1) Change the value of capacitor C-57 from 0.1 mfd to 0.5 mfd. This unit connects across the tertiary or high frequency cut-off winding of the output transformer.

(2) Increase capacitor C-24 of the IF6 plate circuit from 120 mmfd to 300 mmfd.

(3) Increase the value of resistor R-14 from 33,000 ohms to 70,000 ohms. This resistor connects in series with the screen grid circuit of the 1st detector tube.

(4) Change the AVC return connection of resistor R-1 to the plus side of the bias cells. The return lead is yellow and normally connects to the "F" terminal of the first I-F transformer. It should be removed from the transformer and tied to the junction of the bias cells and R-3. This junction is the plus terminal.

(5) Carefully re-align the I-F stages, preferably with a Cathode Ray Oscillograph. The back-ground hiss is proportional to the square root of the I-F band width, hence it is important that correct alignment be obtained.

Figures 1 and 2 of the standard Service Notes on these instruments should be referred to in effecting the above modifications and adjustments.

SERVICE DIVISION

RCA MANUFACTURING COMPANY, INC.

CAMDEN, N.J., U.S.A. JULY 29, 1937