

OVER THE CAMDEN, N. J.

SOLDERING IRON

APRIL 12, 1937

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

MODEL 7-U-2 RUMBLE

Some machines of this type may produce a hum or rumble in the reproduction during operation as a phonograph. This condition is incident only to instruments having a flexible mounting for the motor. To reduce the trouble, remount the motor solidly to the motor board, using the modified mounting parts assembly, Stock #13573. These parts consist of three screws, three plain washers, three spacers, and three lockwashers. Use the spacers between the motor frame and the board, the plain washers at the top of the board, and the lock washers under the head of the screws. Some packages of the Stock #13573 contain three sleeves about 3/4 inch long; these are included through error and are not to be used.

RECTIFIER TUBE FAILURES

Whenever a 5Z4 rectifier tube must be replaced due to low emission or failure, check the condition of the 6E5 - 6G5 Magic Eye to certify that its cathode current is not abnormal and causing the rectifier tube to be overloaded. The current of the Magic Eye should not be appreciably above 5 MA. Always check both tubes of these types when replacing either.

DIAL SLIPPAGE - ACR 155 AMATEUR RECEIVER

Two washers, one a plain flat type, and the other, a spring type, are used between the tuning knob and the larger shaft of the drive. These are held in place by means of a rubber band during shipment. In order to obtain smooth and positive tuning, install the knob after removal of the rubber band, so that there is compression in the phosphor bronze spring washer. Avoid jamming the knob too tight against the washers. The spring washer should be nearest the knob. If a slippage condition is apparent on this drive, the washers should be checked to see that they are in place. Should it be necessary to replace them, use:- One Plain Flat Washer to fit 1/4 inch shaft, 1/2 inch outside diameter, .040 inch thick; and One Phosphor Bronze Spring Washer to fit 1/4 inch shaft, 7/16 inch outside diameter, .010 inch thick and raised approximately 1/16 inches.

STOCK #5212, ELECTROLYTIC CAPACITOR

This unit is a regulating type of capacitor, designed to stabilize surge voltages during period required for tubes to heat when the receiver is first turned "On". It is therefore not replaceable with ordinary electrolytic having similar voltage and capacity ratings. For every replacement use only Stock #5212.

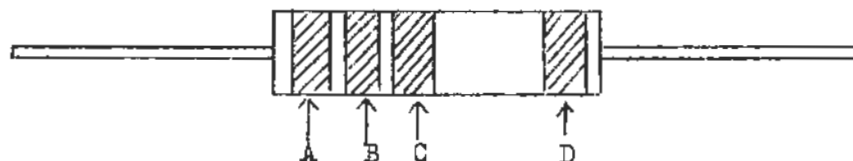
PHONOGRAPH WOW REDUCTION

Abnormal wow in record reproduction does not always originate in the mechanism of the drive motor, but in many cases is the sum of several contributing causes. It is therefore proper service practice, when checking phonographs, to determine the major source or sources of wow in a routine manner, and applying the correction accordingly. The following items should be examined in the order given:-

- (1) Temperature - Instruments which have been stored or left idle for a protracted period at temperatures below that of an average comfortable room (65°) should not be tested or demonstrated until they are warmed up to the temperature of the room. After several hours of operation or if left standing idle at normal temperature for about a day, wow due to low lubricant temperature should not be present.
- (2) Turntable Plate - Inspect this part to see that it is in approximate dynamic balance and does not have excessive vertical wobble. Should the reinforcing ring attached to the under-side of some turntables, be mounted off-center in respect to the spindle axis, wows will be produced due to poor balance. Revolving the turntable 1/2 turn on the spindle will often improve wow.
- (3) Record Wow and Eccentricity - Wow may be inherent to the recording being observed - this of course cannot be remedied by changing the playing mechanism. Other records should be tested for comparison. Worn, enlarged, or mis-shaped spindle holes in records will cause the record to lie on the plate with its axis off-center and wow will result. The average clearance between the record and spindle should not be more than approximately .006 - .007 inches.
- (4) Ejector Arm - The tip of the record ejector arm employed on automatic record changers similar to those of Models D 22-1, 9U, 15U, etc. must be properly centered over the motor spindle in the playing position; otherwise, the record will tend to shift between the axis of the tip and the axis of the spindle, and excessive wow will result.
- (5) Automatic Gear - The main gear of the automatic mechanism and the pinion of the motor spindle should be carefully inspected. There should be no tendency to bind, nor any burrs on their teeth. Also, inspect for dirt or metal particles in the grease used; clean and re-grease the gears if necessary.
- (6) Pickup Centering - If the pickup armature is seriously off-center, an effect will be reproduced which may sound similar to wow. Always check the centering of the pickup.
- (7) Drive Motor - The rotor and spindle thrust adjustments should not be changed from that established at the factory. Proper lubrication of all bearings is very important. A good light grade of clean engine oil should be used on all shaft bearings approximately every six months. Gear systems are usually packed with grease which does not require attention for considerable time. When necessary to replace the gear grease, use a type having good clinging qualities, as well as good high and low temperature viscosity. Use as little as is necessary to obtain satisfactory lubrication of the gears. Gear grease should not be allowed to accumulate in the rotor shaft bearings.

NEW RESISTOR COLOR CODING

The new resistor used in certain circuits of recent receivers has a color coding corresponding to the following description:-



- A - Represents first figure of resistance value in accordance with RMA Standard.
- B - Represents second figure of resistance value in accordance with RMA Standard.
- C - Represents number of ciphers in value of resistance according to RMA Standard.
- D - Represents a tolerance code, for manufacturing use only.

This coding identically matches the arrangement of bands on the RCA Servicemen's Pencil. In comparison to regular code, "A" corresponds to body color; "B" corresponds to end color; and "C" corresponds to dot color. The numerals and number of ciphers represented by each specific color is the same for either type of coding.

The new resistor which is $3/8$ " long x $1/8$ " diameter is used in $1/10$ and $1/4$ watt applications.

CARRIER HUM - 4X, 4X3 and 4X4

Cases of bad distortion or hum when the receiver is tuned to a station may be traced in some instances to one of the terminals of the pilot lamp socket. The terminal usually grounds to the chassis base. It should be adjusted so as to be clear of the chassis.

MAGIC BRAIN INSENSITIVITY - 15 to 16 MEGACYCLES

Whenever the range of the receiver between 15 and 16 megacycles (19 meters) becomes dead, the band switch shorting contacts for the A-band oscillator coil should be carefully checked, cleaned and adjusted. The long contact finger, connected by means of a heavy bus lead from the S-3 section of the switch to the chassis, is the likely source of poor contact, which results in absorption at 15-16 megacycles when "C" band is being used.

CORRECTIONS

"Over The Soldering Iron" February 5, 1937, Page 4:- Please correct dimensions given as 03701 to 0.3701 plus .0005, minus .0000 inches. Also note particularly that the diameter of the gauge is specified on its mean or average (at center of thickness) dimension. The maximum diameter should measure 4.0135 plus/minus .0005 inches and the minimum diameter should measure 3.9855 plus/minus .0005 inches.

"Over The Soldering Iron" March 2, 1937, Page 3:- Please change Stock #13820 to Stock #14301. This part is classified as a Resisto-Fuse. All parts ordered as #13820 will be substituted with #14301.

BLOCKING - MODELS 9K, 9K1, and 9K3

A blocking action which prevents reception over a section of the low frequency end of the scale is generally curable by replacement of the 6L7 first detector tube. Should this not be effective, reduce the 6J7 oscillator grid leak from 56,000 ohms to 33,000 ohms. The 56,000 ohm resistor of the 6L7 injector grid circuit should also be lowered to 33,000 ohms. The value of the oscillator grid coupling capacitor is very critical and no replacements other than stock #12724 should be used.

BAND "D" - MAGIC BRAIN RECEIVERS

Successful use of the ultra high frequency range will be determined by the availability of signals, proper antenna arrangement, and the correct functioning of the receiver. Where investigation of poor performance is necessary, the serviceman should proceed along the following lines:-

Operation - Establish fact that receiver is within line-of-sight range of transmitting station. Tuning must be done very slowly, using vernier control.

Antenna - Ordinary antennae giving good broadcast band results are not generally efficient on "D" band. The RCA Spider Web with the #9689 Auxiliary Doublet is ideal. An alternative antenna should be a short wire, about 10 to 15 feet long, measured from receiver, suspended vertical, as high as possible clear of the building, and exposed to the direction of the transmitting station.

Oscillator Tube - Exchange the 6J7 oscillator tube, trying several if necessary, to find one which oscillates strongly on "D" band.

Soldering - Carefully check soldered joints of D-band connecting straps in Magic Brain unit, particularly at lugs of band switch. Also check soldering of all leads to lugs of all D-band coils. No excess solder should be left at the strap joints or on the surface of the straps as this will cause serious detuning.

Band Switch - The D-band contacts, as well as those of the oscillator circuit which short circuit the coils of the lower frequency bands, must be clean and adjusted for good tension.

Lead Dress - Ground straps of D-oscillator coil should be parallel about $3/64$ " apart throughout their length. Form blue lead from 6J7 plate contact for about $1/2$ turn around the oscillator coil, in a plane perpendicular to the coil, and about $1/2$ " away. The lead from the oscillator D-band trimmer should be as short as possible.

Capacitors - The following capacitors are very critical in respect to value and should be replaced only with replacements specified in the Service Note Parts List:- C-11, C-24, and C-40.

Alignment - Carefully re-align the "D" band circuits in accordance with Service Note instructions.

SERVICE DIVISION
RCA MANUFACTURING COMPANY, INC.