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RCA VICTOR

PREPARED FOR THE INFORMATION OF RCA VICTOR DISTRIBUTORS' SERVICE MANAGERS

RCA MANUFACTURING CO., INC. AUGUST 31,1937

EXPANDER STAGE ADJUSTMENT - Model U-109

The nominal gain of the phonograph amplifier without expansion is 27 decibels at 1000 cycles, an adjustment being provided in the 6L7 expander stage to permit regulation so that ideal expansion will take place. In the new expander circuit of the U-109, there is also provision for automatically increasing the gain in the "expander off" position so that the same average power output will be obtained with and without expansion.

Correct adjustment of the amplifier to 27 db base gain, can be attained by supplying a .08 volt, 1000 cycle signal to the grid of the 6L7 tube and adjusting the "Expander Bias Control" located adjacent to the 6H6 - so that 2.3 volts are registered across the loudspeaker voice coil. The input signal may be obtained from an RCA Stock #9633 Beat Frequency Oscillator; feeding its output across a series combination of two - 120 ohm, and one - 22 ohm resistors, and applying the signal developed across the 22 ohm section through a 0.1 mfd capacitor to the grid of the 6L7 expander tube. The plug with two black leads - fourth from front on amplifier base - should be pulled out for this adjustment. After the bias adjustment has been fixed to give 2.3 volts output, insertion of the plug should increase the voice coil voltage to a value between 4 and 5 volts. The "Dynamic Expander" control should be in its extreme counter-clockwise "off" position during these adjustments. As a check on the expansion, apply 0.5 volts, 1000 cycles from the juncture of the 120 ohm resistors of the Beat Oscillator divider network, to the grid of the 6F5 tube; the plug with black leads being disconnected. The measured output across the speaker coil should then increase to a value between 6 and 9 volts. If this condition does not occur, the circuit or tubes should be examined.

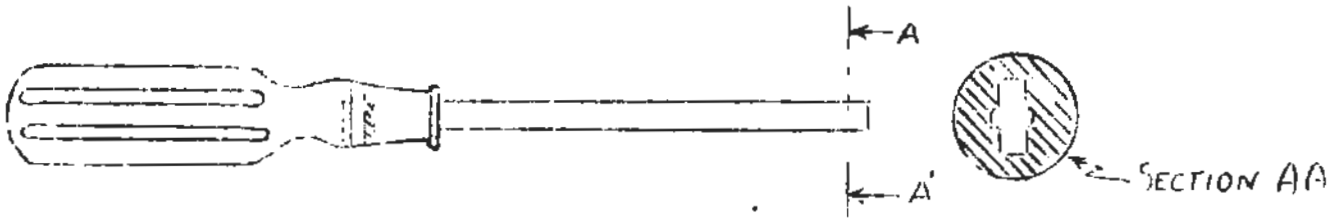
An alternative method of expander adjustment may be applied by disconnecting the above mentioned "expander off" plug, inserting a 0 - 5 ma meter in the plate circuit of the 6L7, and adjusting the "Expander Bias Control" to give a reading of 1 ma.

The pickup output control located under the motor board should not be changed in normal service, however if its adjustment becomes necessary, it should be set to give 12 volts across the speaker voice coil, with frequency record #84519-A being played at 400 cycles; "Dynamic Expander" in off position; volume control at maximum.

The tap on the power transformer primary should be set to correspond to the power line voltage while the above adjustments are being made.

WRENCH FOR SLAB SET SCREW ON CONDENSER DRIVES

A set screw having a "slab" or rectangular shaped head is being employed at various points on tuning drive mechanisms. This type of screw is particularly advantageous in being small, thus requiring less clearance; and at the same time, rugged, which permits it to be tightened securely in a permanent manner without danger of breakage. A service wrench, which has been designed to fit this screw, is being made available in Service Parts Stock. This part may be ordered as RCA Stock #30369 - Wrench For Vernier Drive Set Screw.



CAPACITOR CHANGE - MODELS 85T1, U-101 & U-103

Capacitor C-8, 450 mmfd. which is connected in the oscillator grid circuit is being increased to a value of 470 mmfd. Replacement is not necessary in the field except where trouble is experienced when re-aligning the oscillator circuits, in which case, tracking will be facilitated if the original capacitor is replaced with a Stock #30396 - 470 mmfd unit.

OSCILLATOR ALIGNMENT - 600KC

Receivers of the new 1937-38 line are being peaked on the low frequency end of "A" band at a dial reading of exactly 600 kc. during factory alignment. The tuning condenser is not rocked for this operation but the 600 kc series trimmer is adjusted for maximum with the dial set for 600 kc and the test oscillator set at the same frequency.

A slight improvement in selectivity and sensitivity in the vicinity of 600 kc can be obtained, if this requirement exists in any locality, by careful re-alignment of the 600 kc oscillator trimmer while rocking the tuning condenser. Trimmer adjustments at the 1500 kc end of the dial should be re-checked if this is done.

INSTALLATION CAPACITOR PACK - Model 85-T

On some chasses, where it is necessary to replace the stock #14669 capacitor pack, several thicknesses of fish paper or its equivalent is required between the mounting clamp and the capacitor unit in order to obtain a secure assembly. When replacing this pack, it is advisable to install a 56,000 ohm, 1 watt resistor (Stock #12875) from the oscillator coil terminal L-4 (plus B) to the chassis. This resistor will improve surge conditions in any localities where they are abnormal.

POWER TRANSFORMER - Model 88-K

Stock #14994 is a 110/220 volt, split primary, 50-60 cycle power transformer, which may be used for replacement in the Model 88K, when it is necessary to adapt this instrument to 220 volt operation. Wiring color code is identical to that shown in transformer wiring diagram of Model 85T1 service note, figure 3, page. 3.

CAPACITOR REPLACEMENT - Stock #12897

Occasional difficulty may develop on receivers employing the stock #12897, 4700 mmfd molded-capacitor in high voltage circuits. Failure is generally in the form of low leakage resistance, or complete short circuit. The effect on receiver performance may be exhibited as erratic operation, insensitivity, or lack of oscillation and signals on "A" band. It is to be recommended that this capacitor be replaced on all chasses which require service for any of these reasons. Replacement and later production capacitors of the stock #12897 type are rated at 500 volts, and are tested at a sustained voltage of 900 volts, A-C. Instruments having this unit are:-

Model	Symbol	Circuit Location
88-K	C-6	Plate R-F
810-T	C-6	Plate R-F
810-K	C-6	Plate R-F
810-K1	C-6	Plate R-F
811-K	C-5	Plate R-F
	C-49	Plate AFC
812-K	C-5	Plate R-F
	C-49	Plate AFC
813-K	C-5	Plate R-F
	C-18	Screen Osc.
816-K	C-5	Plate R-F
	C-18	Screen Osc.
	C-74	Plate AFC
U-105	C-6	Plate R-F
U-107	C-6	Plate R-F
U-109	C-5	Plate R-F
	C-49	Plate AFC

CONTINUOUS OPERATION - ELECTRIC TUNING DRIVE

The mechanical drive mechanism of the Electric Tuning instruments is not rated for continuous operation over sustained periods. Tests and demonstrations which require constant running should therefore be avoided. Temperature rise of the motor coils, wear of contact fingers, wear of gears, and wear of bearings are likely consequences of abnormal operation. Under conditions of regular operation, wear and mechanical deterioration of parts will not become excessive within several years of usage.

SERVICE NOTE CORRECTIONS

Model 85T1 - On page 4, figure 4, - 17 volts is shown from capacitor C-10 to chassis in error. The potential of capacitor C-24 to chassis should be indicated as - 17 volts.

Model 84BT - Speaker units identified by marking "76474-1" require the following parts for replacement:-Stock #30236 - Cone and Dust Cap; Stock #5118 - Male Plug; and Stock #30237 - Output Transformer. This data should be added to copies of Service Notes used for ordering purposes.

Model 84BT and 84BT6 - The stock number of the 150,000 ohm resistor should be 5027 instead of 5023 as shown.

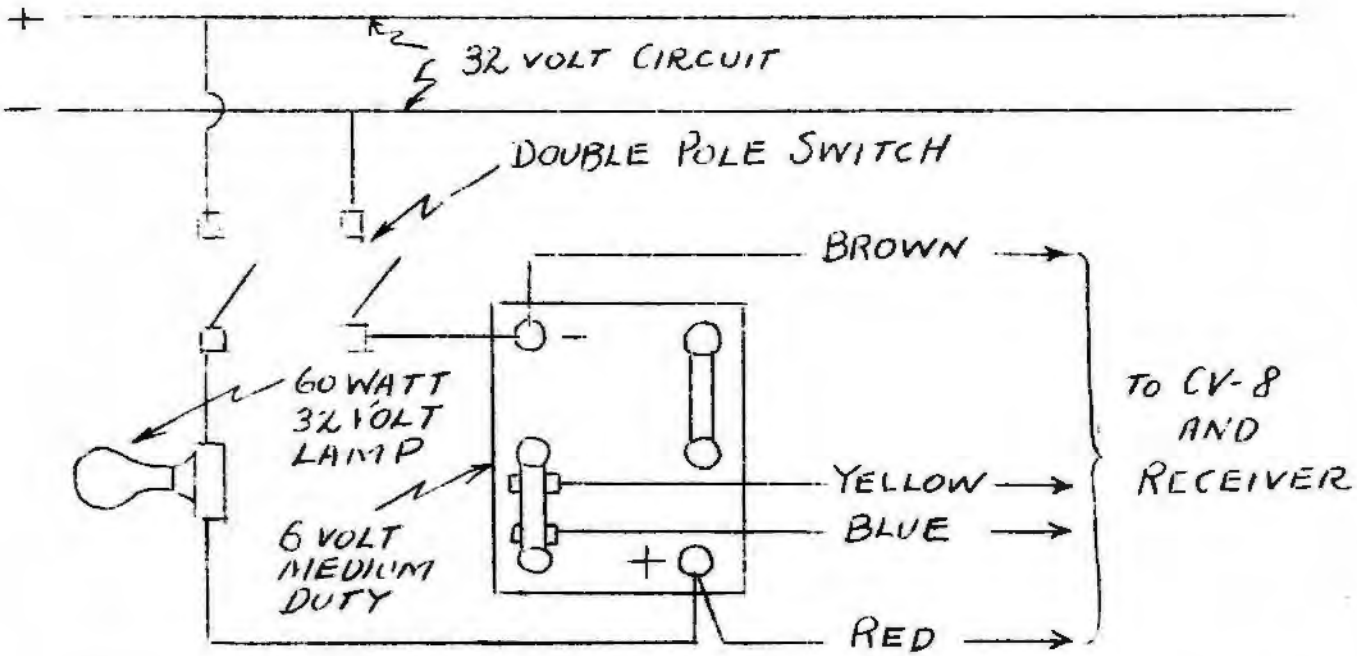
Model 812K - Figure 4, Page 7; Symbol L-23 on bottom of 4th I-F transformer should be L-22.

ADAPTATION BATTERY RECEIVERS TO 32 VOLTS

Models 85BT, 85BK, 86BT and 86BK -- WITH CV-8 PAK-O-PWR

These 6-volt vibrator type receivers may be operated in conjunction with 32-volt farm lighting systems by using a standard 6 volt, medium duty battery for direct supply to the receiver, and charging this battery from the 32-volt circuit thru a current limiting device such as a standard 32 volt lamp. With such an arrangement, connections to the receiver will be kept standardized, performance will not be hampered by possible hum interference, and positive protection will be afforded against harmful voltage variations.

The sketch below shows the proper connections. Accessories required are:- One 60 watt, 32 volt lamp; one socket for this lamp; one double pole switch having five ampere capacity; one medium duty 6 volt storage battery; and necessary wiring.



CHARGING - With a 60 watt, 32 volt lamp used in the charging circuit as shown, it will be necessary to charge the battery by closing the double pole switch approximately as many hours as the receiver is used. The receiver should not be in operation while charging. It is preferable not to charge the battery while the receiver is in use. Due to variations in batteries, their phases of life, etc. a slower or faster charge rate may be required. In the former case, a 50 watt lamp is recommended, and for the latter, a 75 watt should be used. Periodic hydrometer measurement of specific gravity will indicate the necessity for a higher or lower rate of charging.

SERVICE DIVISION
RCA MANUFACTURING COMPANY, INC.

CAMDEN, N.J., U.S.A.

August 31, 1937