

PLAIN TALK

AND

Technical Tips

RCA RCA VICTOR

VOL. 7

NO. 3

MARCH, 1964

a monthly publication for the service industry about products of: RCA VICTOR HOME INSTRUMENTS OPERATIONS RADIO CORPORATION OF AMERICA

THE UHF TUNER

The UHF tuner operates at extremely high frequencies; however, its electrical circuitry and mechanical construction is very straightforward and simple.

Current production of RCA UHF tuners include the KRK 66 and the KRK 112. Both are very similar; the KRK 66 employs a 6AF4A oscillator and the KRK 112 employs a nuvistor type oscillator tube.

Electrically, the UHF tuner operates in much the same manner as a VHF tuner. It has three tuned circuits, RF, mixer, and oscillator. Mixing is accomplished by a 1N82 crystal and the IF output has a center frequency of 43.5 mc. Each tuned section is tracked by a ganged variable capacitor at its inductor bar termination. The RF signal is coupled to the mixer section by means of an aperture in the shield between the compartments. The local oscillator is coupled to the mixer section with the adjustable injection loop L59. The circuit consisting of L53, L54 and C54 couples the mixer output to the IF input jack J50.

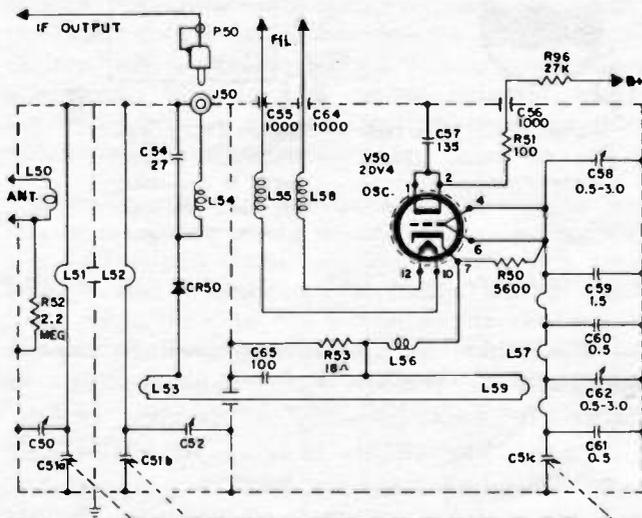


Figure 1—Schematic Diagram KRK 112 UHF Tuner

High band local oscillator adjustment is made by the placement of the tab C62. Low band oscillator adjustment is made by C58 which is accessible from the outside of the tuner case.

When service is required on a UHF tuner, a few simple checks should disclose the trouble. A thorough

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CONVERTING TO UHF

Although any receiver can be adapted to receive UHF station signals by making use of an external UHF converter, the preferred method of UHF conversion is by means of a factory designed unit which converts directly to the receiver IF frequency. The advantage of using this type converter (referred to by RCA as a UHF Dealer Kit) is that optimum performance is achieved, the overall styling of the receiver is maintained, tuning is easier, and there is less possibility of signal interference.

RCA has for many years made available appropriate UHF Dealer Kits capable of converting virtually every model of RCA television instrument to UHF.

The various Dealer Kits available for current model RCA Victor television instruments are described in the following paragraphs. Each kit comes complete with all mounting hardware such as screws and brackets, tuning knobs, and complete installation instructions.

The DK 152 UHF tuner kit consists of a continuously variable KRK 112F UHF tuner with mounting hardware and knobs. It is designed for use in the KCS 142 and KCS 146 chassis. There is no IF amplifier supplied in this kit, because these two chassis both employ the KRK 105 which includes a two-stage IF amplifier.

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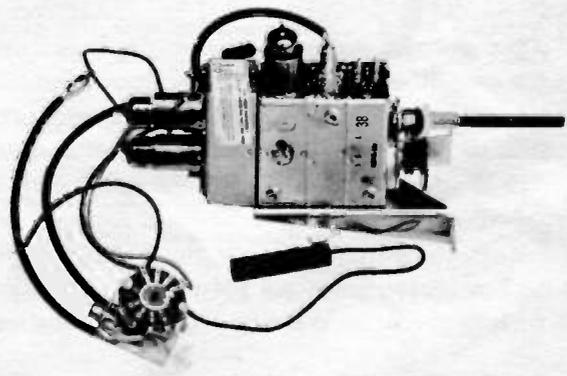


Figure 2—Typical UHF Dealer Kit Less Knobs and Hardware

RC 1215 FM-STEREO CHECK

The RF and IF circuits of an FM receiver must be in correct alignment before any adjustments are attempted on the FM-Stereo portion of the receiver. Reference should be made to the service data applying to the receiver for specific details in achieving correct RF and IF alignment. Generally the rule is that the receiver should be broad-banded sufficiently so that the response on either side of 10.7 mc extends to 100 kc at approximately 50 to 70% points on the

signal source when servicing and adjusting FM-Stereo circuits.

A simple 6-step procedure for checking the FM-Stereo operation of the RC 1215 is illustrated in Figure 3.

The WR-51A RF output is connected directly to the FM antenna terminals of the receiver. The receiver is set for FM-Stereo reception and tuned to 100 mc (the RF output frequency of the WR-51A). In step 1 the WR-51A function switch is set to "audio and mono FM." The frequency selector is set at 67

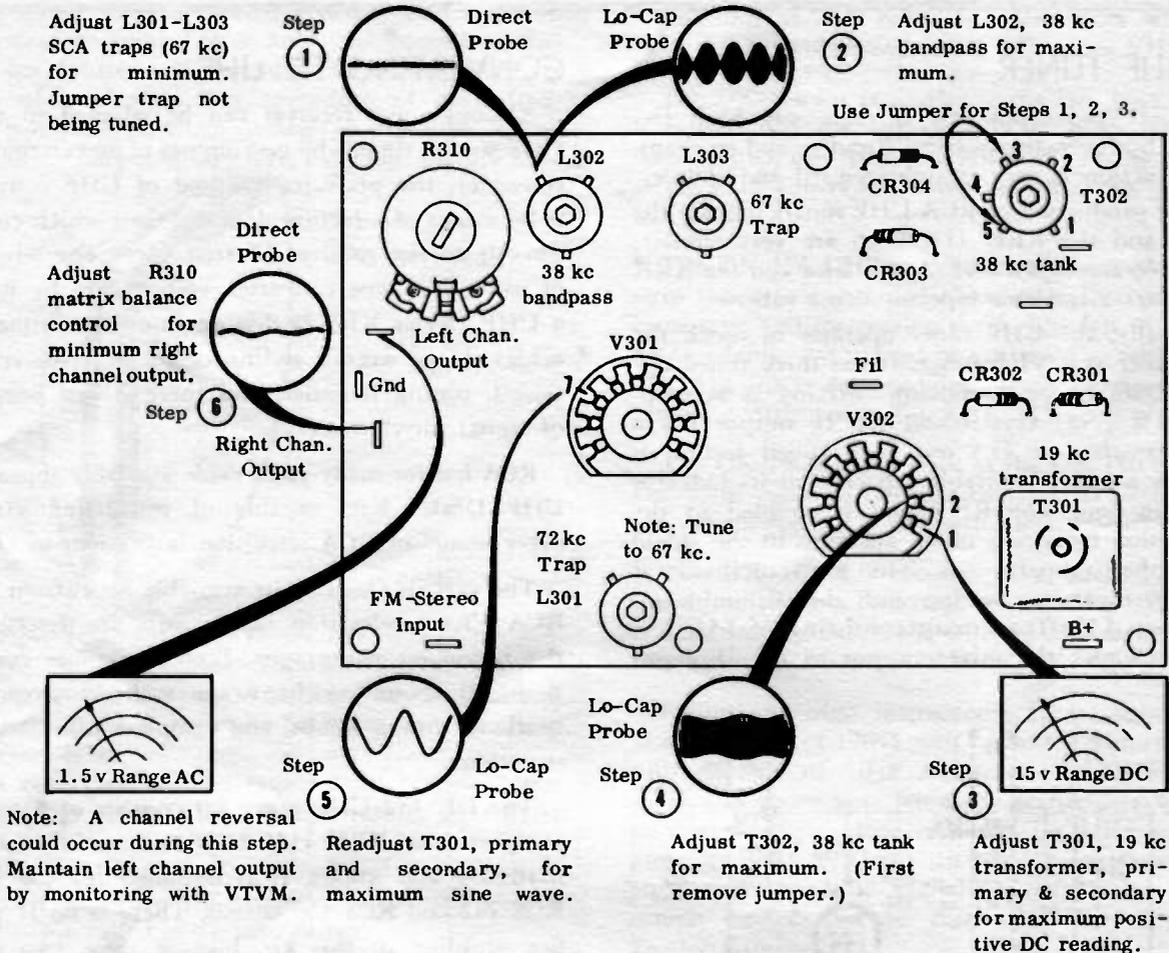


Figure 3—Simplified 6-step FM-Stereo Test Procedure for the RC 1215

response curve. In addition the ratio detector of the receiver should be adjusted so that "crossover" occurs at 10.7 mc and that symmetrical response is obtained. Also the overall sensitivity of the receiver should not be compromised excessively while making alignment adjustments. The dial accuracy of the receiver should be checked across the tuning range and corrected when required. When these conditions are met, it is a rather simple matter to adjust the FM-Stereo portion for best performance. An FM-Stereo Signal Simulator such as the RCA WR-51A is recommended as a

kc. The SCA traps are then adjusted. In steps 2 through 6 the WR-51A function switch is set to "stereo-left," audio frequency to "400 cycle," RF deviation to "75 kc" and the 19 kc subcarrier level is set to "9." Terminals 3 and 5 of T302 are jumpered during steps 1, 2 and 3. The matrix balance control R310 should be set to the center of its range before starting the alignment procedure. RCA Victor Service Data File 1964 No. 4 may be referred to for more complete alignment and servicing information for the RC 1215 tuner.

NEW COLOR ALIGNMENT AIDS

Five new test probes, designed to facilitate alignment and servicing of black-and-white and color television receivers are now available through RCA Parts and Accessories.

These test probes are intended to make alignment of black-and-white and color television receivers easier and enable the technician to use bandpass analysis as part of his regular servicing technique.

Proper alignment of the bandpass circuitry in television receivers is essential in providing for good television performance. When the right equipment



Figure 4—IF Test Block — Typical of the new Test Blocks

is employed, proper receiver alignment is easily achieved.

Various test blocks and matching "pads" are required when checking bandpass circuitry to insure accurate representation of circuit response. Until now, the technician has had to fabricate the test circuits as the need arose. Often these circuits are constructed on a temporary basis, or their use was bypassed, resulting in improperly aligned circuitry and poor television receiver performance.

A hastily assembled test block can give rather uncertain results for many reasons, and misrepresentation in bandpass circuit response can result in time being wasted in checking components. On the other hand, when the necessary accessories are available, a fast overall alignment check can pin point the faulty circuit accurately and rapidly. Always be sure to use the proper test probes when checking the alignment of a receiver.

The new test probes include special tips that virtually eliminate the chance of accidental shorting of receiver circuitry and greatly simplifies test instrument hook-up and disconnection. Each special circuit is of single unit construction enclosed in a plastic case. All leads are of the shielded type and the cable connections accommodate the specified test equipment. Each unit is clearly labeled as to its specific function.

These service accessories with their stock numbers are:

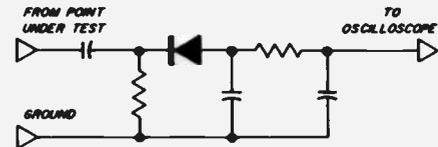


Figure 5—8B105 Video Detector Test Block

8B105 Video Detector Test Block—Used during chroma bandpass alignment and chroma board troubleshooting. Connects directly from the circuit under test to the Oscilloscope. Also used with VTVM during the sound take-off transformer adjustment.

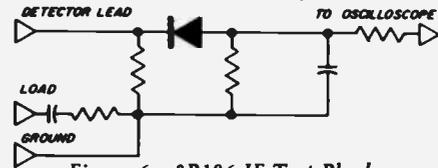


Figure 6—8B106 IF Test Block

8B106 IF Test Block—Used to connect a load to the plate of the 2nd IF amplifier and as a detector at the plate of the 1st IF amplifier during adjustment or checking of the over-coupled IF link circuit. The output connects directly to the vertical amplifiers on the Oscilloscope.

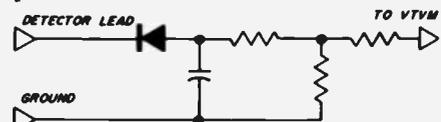


Figure 7—8B107 Sound Detector Test Block

8B107 Sound Detector Test Block—Used during peak alignment of the sound take-off transformer and the audio driver transformer as a detector probe for the VTVM.

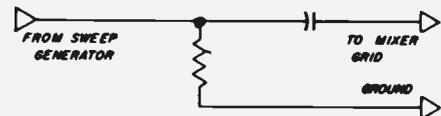


Figure 8—8B108 Mixer Grid Matching Pad

8B108 Mixer Grid Matching Pad—Used to couple the output of both the sweep and signal generators to the mixer grid during Picture IF alignment, link alignment, and trap adjustments on both B/W and Color receivers.

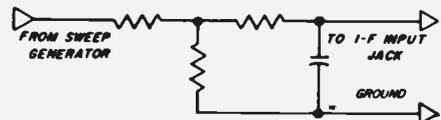


Figure 9—8B109 Tuner IF Input Head

8B109 Tuner IF Input Head—A matching pad used to couple the sweep generator to the IF input jack during adjustment of the 40 mc input coil on VHF tuners used as UHF IF amplifiers on both Color and B/W receivers.

These test devices may be employed as specified in service data for checking and adjusting the circuitry of black-and-white and color television receivers. If you have been "bread boarding" these test circuits, you will want to look into the new test probes and their advantages in performing alignment work. Check your local RCA Victor distributor regarding price and availability.

PAN-O-PLY

Certain 23" Black and White television instruments recently announced by RCA incorporate a new Pan-O-Ply picture tube. This tube, designated as type 23ENP4, is known as a "banded" picture tube and has integral implosion protection by reason of a special band arrangement applied to the rim of the tube during manufacture. A metal rim band is applied to the periphery of the picture tube with a special cement. A tension band is then strapped over the rim band; and while under tension, the latter band is spot welded. The rim band and the tension band then become a permanent part of the picture tube. With such construction, implosion protection is accomplished. Extensive tests have proven that a penetrating blow on the face plate results in a hole and possibly radial cracks on the front of the tube; there is a minimum chance of implosion. The spreading of glass fragments is minimized when damage to this tube occurs.

For safety purposes, however, the usual picture tube

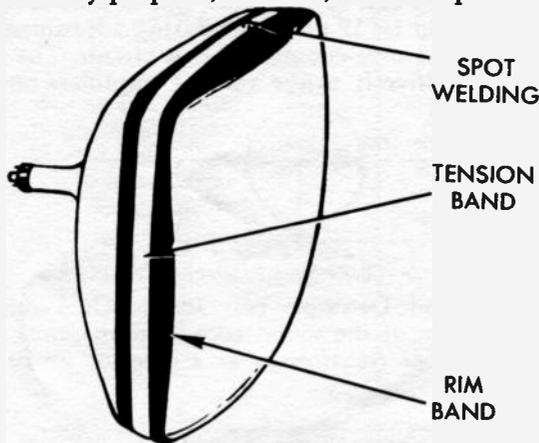


Figure 10—Construction features of the Pan-O-Ply Picture Tube

handling precautions should be observed. Goggles and gloves should be worn while handling and installing any picture tube.

This type picture tube requires no "capped" surface and no safety glass, which results in lighter weight and easy cleaning.

The external conductive coating and the implosion protection hardware are grounded when the Pan-O-Ply tube is installed in the instrument.

THE UHF TUNER

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visual inspection of the unit will reveal any mechanical problems. If the tuner exhibits electrical trouble, a check of the oscillator tube, and the crystal mixer should be tried first.

Be sure to observe crystal polarity; a reversed crystal can increase the noise figure appreciably. In difficult signal areas it is good practice to try several crystals selecting one which gives the best signal-to-noise ratio.

Alignment of a UHF tuner is seldom necessary since the unit is designed and factory aligned for optimum performance. Field adjustments should be limited to low and high end oscillator tracking.

CONVERTING TO UHF

(Continued from Page 1)

The DK 152B UHF tuner kit is similar to the DK 152 kit. An added bracket is included for mounting the tuner in the 9-AB-3 MV series instruments.

The DK 153 Kit consists of a continuously variable KRK 112 UHF tuner, including a two-stage IF amplifier assembly. It is designed for use with portable instruments using the KCS 143 and KCS 144 chassis.

The DK 154 kit employs the KRK 112D UHF tuner and a two-stage IF amplifier assembly. The kit is designed for use with the B/W and color instruments in which the control panel and mask is an integral unit and in portable instruments which employ the KRK 103 and KRK 107 series VHF tuners.

The DK 155 kit is similar to the DK 154; however, it is designed for use with B/W and color instruments which use either the KRK 103 or the KRK 107 series VHF tuners and have the "floating" type control panel.

The DK 156 UHF station insert consists of a UHF strip tuned to a specified channel, UHF channel indicator tabs, and instruction sheet. The DK 89 UHF antenna adapter kit is used in conjunction with the DK 156. The kit is designed for use in instruments with remote control using the KRK 113 strip type tuners.

The DK 156B is the same as the DK 156 except the DK 156B contains one additional UHF indicator tab for use on the 9-AB-3RS series instruments.

The DK 163 Kit consists of a KRK 112R UHF tuner, including a two-stage IF amplifier assembly. It is designed for use in the 94-A-23 MV series portable instruments.

Future television instruments (those manufactured after April 30 of 1964) will include a factory-installed unit capable of UHF reception. As UHF becomes more and more popular many set owners will want to convert their older receivers for UHF operation; your local RCA Victor distributor has complete information as to the availability of Dealer Kits and which models can be converted with appropriate Dealer Kits.

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