

# Peaking Image and Sound Stages In Television Receivers

## How to Adjust the Sound I.F.; "Sound-Trap" Trimmers and the R.F. Alignment

**Harold J. Heindel**

*Chief Engineer, Andrea Radio Corp.*

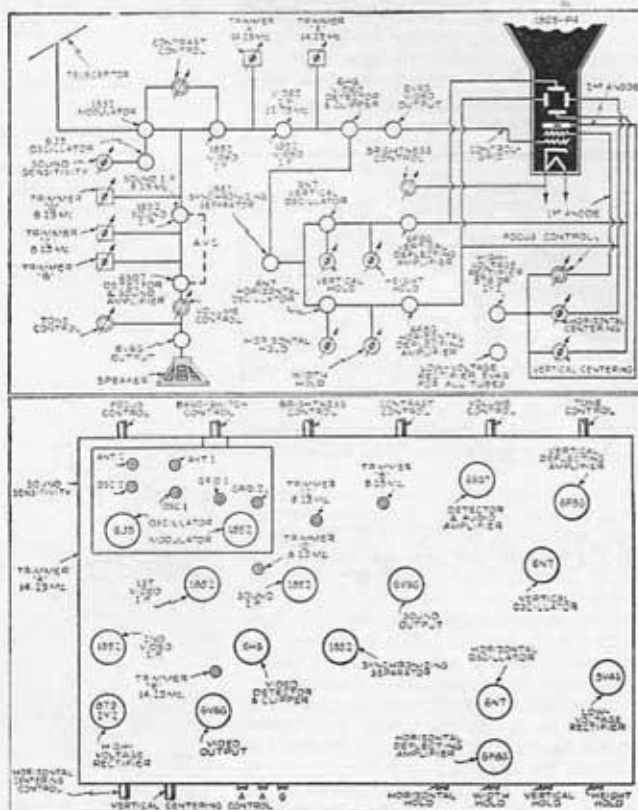
● SURPRISING as it may seem, the adjustment and alignment of a television receiver is less complicated than similar operations on an all-wave sound receiver. The prevailing idea that complicated and mysterious rites must be performed on a sight-and-sound set is due to lack of familiarity with new circuits.

While it is necessary to impress upon the uninitiated set owner the importance of leaving the trimmers and R.F. condensers strictly alone, servicemen and set builders should have the experience of making these adjustments on a complete television receiver, so that they will be able to tackle any type of television receiver with complete confidence based on knowledge.

Accordingly, the steps for setting the sound I.F. and sound trap trimmers used in most television receivers, and the R.F. condensers are given here. You will see that only standard instruments are required, and that the adjustments can be carried out in complete safety. While these instructions are designed for Andrea televisions, they also apply to other makes.

**ADJUSTING SOUND I.F. TRIMMERS:** Following are the steps in which the sound I.F. trimmers should be adjusted:

1. Remove the 879 or 2Y2 high-voltage rectifier tube as a measure of safety.
2. Connect a signal generator to pin 4 of the 1852 modulator tube. Set the generator accurately at 8.25 mc.
3. Put a rectifier-type meter across the voice coil of the loudspeaker. It is preferable to use a meter having 2000 ohms per volt.
4. Adjust audio I.F. and A.V.C. trimmers, B, C and D for



These two diagrams, with the aid of the accompanying explanation, will help the experimenter "hunt bugs" in television receivers.

maximum output, as indicated by the meter. After the initial adjustments, go over them carefully a second time.

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**ADJUSTING THE ADJACENT SOUND-TRAP TRIMMERS:** The adjacent sound-trap trimmers are provided to keep the audio signals out of the video circuits. These trimmers should be adjusted as follows:

1. Remove the socket from the base of the picture tube. Connect a rectifier type meter from Pin 10 on the picture tube socket to the ground, through a .5 mfd., 600 V. paper condenser.
2. Connect a 400 cycle modulated signal generator to Pin 4 of the 1852 modulator tube. Set the generator accurately at 14.25 mc.
3. Adjust the signal generator for maximum deflection on the meter.
4. Adjust video I.F. trimmers A and E for *minimum* deflection of the output meter.

**NOTE:** The signal generator frequency must be accurate. Otherwise, this adjustment may be carried out on a frequency within the pass-band of the video I.F. system resulting in loss of picture detail and synchronization.

**ADJUSTING SOUND SENSITIVITY:** The normal position for the sound sensitivity condenser is when the variable plate is half-way interleaved with the fixed plates. To adjust this condenser, turn the shaft very slowly until the maximum audio signals are obtained. If the adjustment of this condenser affects the picture, set the condenser for best picture details. Then readjust sound I.F. trimmers B and C, and finally readjust the sound sensitivity condenser.

**ADJUSTING R.F. ALIGNMENT:** Since the R.F. units of all television receiver and KT-E-5 kit are aligned with great precision at the factory, and because the designs of such parts have been found exceedingly stable under all operating conditions, it is most unlikely that realignment will be necessary. However, in case the adjustments are changed for any reason, realignment should be carried out in the following manner:

**NOTE:** These instructions apply to Andrea 5" sets and kits having only television channels 1 and 2. If your set is equipped for receiving other channels, follow the special data supplied by the maker's factory. Keep the bottom plate on the chassis during the R.F. alignment.

1. Because of the design of the R.F. unit, Band 2 must be aligned first, and Band 1 afterward. Incorrect settings will be obtained if Band 1 is aligned first.
2. Make sure that the sound I.F. trimmers have been adjusted to 8.25 mc. Otherwise, the R.F. alignment will not be accurate.
3. Connect a signal generator to the antenna terminals A,A of the receiver. Set the generator accurately at 55.75 mc. (55,750 kc.).
4. Put the band switch on channel 2.
5. Connect a rectifier type meter across the voice coil of the loudspeaker.
6. Loosen the locknut on Oscillator Condenser 2, so that the plunger moves freely. It is a great help to have a tool with a side pin to hook into the hole in the plunger.

7. Adjust the plunger for maximum output. Tighten the locknut part way.
8. When the locknut is nearly tight, readjust the plunger for maximum output. Then tighten the locknut firmly.
9. Connect the rectifier type meter from 10 on the picture tube socket to the ground, through a .5 mfd. 600 V. paper condenser.
10. Adjust the signal generator to 52.5 mc. (52,500 kc.).
11. Turn the chassis on its side, and slip a Spintite wrench through the hole in the bottom of the chassis, and put it over the tubular bottom end of Grid Condenser 2. This just adds capacity to detune it slightly.
12. Loosen the locknut on Antenna Condenser 2, and adjust the plunger for maximum picture output, as indicated by the meter. Then tighten the locknut part way, readjust the plunger, and tighten the locknut firmly.
13. Remove the Spintite from Grid Condenser 2, and put it on Antenna Condenser 2.
14. Loosen the locknut on Grid Condenser 2, and adjust the plunger for maximum picture output, as indicated by the meter. Then tighten the locknut part way, readjust the plunger and tighten the locknut firmly.
15. To align Band 1, carry out the preceding steps to 14 using 49.75 mc. for the signal generator (step 3), put the band switch on channel 1 (step 4), and adjust Oscillator Condenser 1 (step 6).
16. Use 46.5 mc. for the signal generator (step 10) and use Grid Condenser 1 and Antenna Condenser 1 in the subsequent steps.

This completes the R.F. and Oscillator realignment of Bands 1 and 2.

The 12.75 mc. video I.F. system is self tuned and no adjustments are necessary.

**PERMANENCE OF ADJUSTMENTS:** Once these settings have been made, they will hold their adjustment for an indefinite period. The reason lies largely in the high quality of the parts used for television receivers. You see, no compromise in performance is permissible because the functioning of the circuits is made visible in the picture tube.

Because successive models of sound receivers have been produced at cheaper and cheaper prices, many people expect that television sets, too, will soon cost much less than current types. What is not generally recognized is that reductions in the cost of sound sets have been achieved largely by lowering the standards of audio quality.

The average present-day varieties of cheap sound receivers may be acceptable to non-critical ears. In fact, the ear is a most inaccurate organ, and any tendency to tone-deafness favors the loudspeaker.

On the other hand, the eye recognizes and rejects distortion and lack of sharpness in video reproduction. Furthermore, defective vision calls for still more perfect sight reception! From this it is clear that video quality must be the primary consideration of future development, with lower prices a definitely secondary issue.