Alignment of Picture and Sound - (With Static Signals)

1. Before attempting alignment of the TELESET be sure that your antenna lead is connected.

2. Use your local television station to find what hours during the day the static test patterns and some signals is being transmitted.

3. Pressure these items:
   - One (1) B.C. barometer
   - One (1) air wave
   - One (1) tuning dial (preferably plastic or other non-metallic material)

4. It should be definitely understood at this time that the tuner is pre-set at your factory to cover the entire wavelength of channels. No adjustments are to be made on this tuner or the I F. coil which is also pre-set.

5. Proceed to align receiver as follows:

   a. Turn set off, connect the 1.0 MHz coupler to one of the earsides. Leave the wire lead of coupler free. Although all antenna cables are similar, clip the other antenna lead at the tip of the coupler.

   b. Clip one antenna lead to the chassis and clip the coupler lead at the lead to the chassis and clip the coupler lead at the lead to the 50 uF of a filter. Turn the channel selector to the number of your local television station. Tune on set. You can see "tuning" on the picture signal when it comes through. Be sure that volume and contrast controls are at full select setting.

   c. Allow a noise for full warm-up. Rotate side tuning controls and adjust to the only ear with the least noise. If earside too low or too loud adjust control. Select position will be slight. Keep brightness adjusted midway.

   d. If on blank screen, hold the channel position of tuner, try some procedure on the other channel and then select at the other channel. If picture is not clear then select ear with noise or loss of picture. If earside is not too high or too low in frequency. If results are the same then check antenna cable at the transmitter and also at the screen. If everything appears normal but still no picture then recheck set for proper connections.

6. If you have a loud picture content should appear in the receiver but probably be nothing or a clipping. Remove antennas. Since two are not in the circuit. These controls should not be turned. When this procedure is followed the actual alignment of the picture and sound should be done.

7. This television receiver will perform best with a television antenna kit and a 300 ohm one lead in line. If you are not using a television antenna kit or a 300 ohm one lead in line, your television set may not be operated satisfactorily.

8. Always locate your television receiver in a room where it is direct sunlight or window light falls on it. If a room is too dark, it should be placed in a room that is not moving about. Always line up the receiver at the set as you are using it. This will extend the life of your picture tube.

9. Technical Section for TELESET

   a. A list of the following is possible list of failures and an indication of procedure for their correction:

   b. **Symptom**: No picture or sound. (If picture is present)
   **Possible Cause**: Inoperative receiver
   **Remedies**: (a) Check all controls and controls in the circuit and refer to the service notes in the terminal. Check the receiver.

   c. **Symptom**: Picture not clear with center control.
   **Possible Cause**: Improper alignment of controls.
   **Remedies**: Figs. F50 and F51

   d. **Symptom**: Picture varies vertically (too much)
   **Possible Cause**: Improper alignment of controls.
   **Remedies**: Fig. F50

   e. **Symptom**: Picture varies vertically (too little)
   **Possible Cause**: Improper alignment of controls.
   **Remedies**: Fig. F50

   f. **Symptom**: Better L. F. horizontal and vertical sound.
   **Possible Cause**: Improper alignment
   **Remedies**: Figs. F50 and F51

   g. **Symptom**: Low level of sound.
   **Possible Cause**: Improper alignment
   **Remedies**: Figs. F50 and F51

   h. **Symptom**: No picture.
   **Possible Cause**: Inoperative controls.
   **Remedies**: Figs. F50 and F51

   i. **Symptom**: No sound at all.
   **Possible Cause**: Inoperative sound.
   **Remedies**: Figs. F50 and F51

   j. **Symptom**: Sound at all.
   **Possible Cause**: Inoperative sound.
   **Remedies**: Figs. F50 and F51

© John F. Rider
14. Vertical hold control [Fig 42]
   (a) and vertical oscillator (See Fig 43)
   (b) wrong separator plate.
   (c) check and replace tube.
   (d) Check plate resistors.

15. Picture too black. (Red and green under-test)
   (a) load resistor in plate of vertical video amplifier high is in value for the particular location of the receiver.
   (b) check plate resistance.
   (c) locate and replace.

16. Slight and sound not together.
   (a) Ground I.F. coil shield.
   (b) Select switch on wrong channel position or tuning control in wrong position.
   (c) a normal condition when receiving distant stations.
   (d) defective antenna lead connection.

17. Picture saturated, same time or offset in both.
   (a) Vertical non-linearity.
   (b) correct parts.
   (c) check all parts.
   (d) replace.
   (e) replace.

18. Straight horizontal line instead of raster.
   (a) Bad vertical oscillator or amplifier tube.
   (b) check and replace.
   (c) check and replace.
   (d) check and replace.

19. Vertical straight line instead of raster.
   (a) ALL 15V tube.
   (b) replace.
   (c) voltage readings will help locate troubles.

20. Picture cannot be centered.
   (a) leaking high voltage coupling capacitor (See figures 48 and 50)
   (b) Check and replace.
   (c) replace.
   (d) correct or replace.

21. Clicking sound heard outside the sound channel.
   (a) high voltage coupling capacitor.
   (b) an off value in megohm between high voltage circuit.
   (c) check and replace.

22. Add vertical center control (Horizontal).
   (a) Look for steady building, or objects that would cause reflections of signal.
   (b) Repainting of signal will help correct condition.
   (c) add brightness and contrast control properly.
   (d) turn fine tuning knobs slightly or readjust cathode tube volt.

23. Turn picture tube into clear picture.
   (a) Adjust width control.
   (b) Adjust centering control (Vertical),
   (c) adjust centering control (Horizontal).

Notes for Indicator Test Chart Faults

- Figure 29 (See service note on vertical non-linearity).
- Figure 30 (See service note on vertical non-linearity).
- Figure 31 (See service note on vertical non-linearity).
- Figure 32 (See service note on vertical non-linearity).
- Figure 33 (See service note on vertical non-linearity).
- Figure 34 (See service note on vertical non-linearity).
- Figure 35 (See service note on vertical non-linearity).
- Figure 36 (See service note on vertical non-linearity).
- Figure 37 (See service note on vertical non-linearity).
- Figure 38 (See service note on vertical non-linearity).

ALIGNMENT OF TV RECEIVING SYSTEMS

We have found through experience that it is relatively easy to align the video stages to get a preliminary picture to the video i.f. system is sufficiently broad to pass some noise at almost any setting.

It is, however, more difficult to align the sound channel because these circuits are sharply tuned. We, therefore, advise that a signal generator be used for this purpose. Our sound channel will be tuned to exactly 21.25 Mc. To simplify this adjustment, it is recommended that the following procedure be used. Signal can be obtained with either the speaker or output meter.

1. Tune signal generator to 25.25 Mc. Using a 400 cycle tone or tone.
2. Connect hot lead of generator to ground of second sound I-F tube (Fig. 4). Connect ground lead to chassis. Turn volume control to full clockwise setting. Turn on set and allow one or two minutes for warm up.
3. Tune primary of F.M. Transformer, which is the upper slug, for maximum sound in speaker. If too loud reduce generator output.
4. More generator lead with condenser to grid of first sound I-F tube.
5. Adjust slug with controls tuning of the sound I-F coil for maximum sound of signal.
6. Tune secondary of F.M. Transformer by means of the lower slug of discriminator winding in the underside of chassis for null point. You will notice in making this adjustment that you will get maximum signal response from loud speaker or output meter. On the settings of this slug, very close together. Between these two positions there will be a null point, that is, a point that is considerably lower in intensity than on either side of this adjustment. It is this point that is desired. When this is found the operation is completed. Notice the signal will not completely shut off, but the adjustment if the volume control is turned on full. This completes the sound adjustment.

7. Connect signal generator through the 0.001 mfd condenser to the grid lug (Fig. 2) of the first video I-F tube (Fig. 3). Clip the ground lead of the generator to chassis at base of tube B. Advance control contrast control to maximum setting. Clip one end of second 0.001 mfd condenser to the grid lug (Fig. 2) of video output tube (Fig. 4). Clip other end of condenser to chassis. You can now listen to the modulated signal on the audio coil adjustments. An output meter connected through 0.100 mfd condenser can be connected to the same point. Make this adjustment at several points through video I-F alignment.

8. Keeping the signal generator set at 21.25 Mc, proceed to adjust cathode sound trap (hole 23). Adjust for maximum signal output. Keep signal generator at zero mfd for all I-F adjustments but do not reduce contrast control setting. Also keep signal generator and phones connected to same points throughout video I-F alignment.

9. Set signal generator to 29.5 Mc. Adjust fourth video I-F coil (hole 21) for maximum output at that frequency. Note that on these adjustments the coil should be turned to the position you will be sure that you can go through these points to be certain that the coils are in the correct frequency range. Then adjust maximum or minimum as specified.
TECHNICAL SECTION FOR 7B TELEKITT (Cont'd)

Alignment of 7B Telekitt with Instruments (Cont'd)

10. Set signal generator to 26 Kc. Adjust third video I.F. coil for maximum output at that frequency. If signal becomes too loud reduce generator output.

11. Set signal generator at 23.9 Kc. Adjust second video coil for maximum output at that frequency. If signal becomes too loud reduce generator output.

12. The first video coil (mixer output) is in the Telekitt Tuner. This has been adjusted at the factory to the frequency of 22.8 Kc. The sound take-off coil is also on the tuner and it has been pre-aligned to 6.25 Kc. at the factory. The sound coil adjustment is on the top of the large coil and the video adjustment is on the underside of the coil. Do not make any adjustments to this coil.

13. The above adjustments will produce a broad band frequency response of 4.5 Mc. which will insure pictures of high definition and sound of excellent clarity. If sweep generator and oscilloscope data is required it can be secured by written request.

VOLTAGE ANALYSIS

The voltage chart is provided to assist TELEKITT builders in locating and isolating defective parts, tubes and etc. It should be remembered that the chart was made under certain conditions. These conditions must be duplicated if identical results are to be obtained. The conditions are that all controls must be in counter clockwise position. The line voltage at which the readings were taken was 105 volts at 60 cycles. The meter used was a 20,000 ohm per volt meter.

However it is necessary for the kit builder to be concerned if his line voltage is higher or lower than the test chart condition. All he must remember is that if his line voltage is higher his readings will be higher and if lower his readings will be lower. Also when making checks no externous or signal source should be connected to the set.

RESISTANCE ANALYSIS

Resistance readings are also provided on the chart to aid in locating defective parts in situations where it is unsafe to apply power, for instance, where smoke or arcing is observed. Once again the controls must be in the positions shown on the chart. This chart should be your greatest aid in locating any troubles which may occur in your Telekitt.

TELEKITT GUARANTEE

ELECTRO-TECHNICAL INDUSTRIES guarantees the operation of your TELEKITT but this guarantee is automatically voided if:

(a) Acid-core solder is used anywhere in the set.
(b) A different chassis or parts layout is used other than that provided or specified.
(c) Wiring is not as specified.

* - This Voltage measured between pins 2 & 7 - It is the line Voltage - 105V AC.
a - With line tuner meshed.
b - Measured on 50V Range.