# SERVICE MANUAL

## 10L41, 10L42 & 10L43

PHILCO Factory-Supervised Service

### SPECIFICATIONS

Intermediate Frequencies
- Video Carrier ..... 45.75 MC
- Sound Carrier, V.I.F. ..... 41.25 MC
- S.I.F. ..... 4.5 MC

Transmission Line ..... 300 ohm input, twin wire lead
Operating Voltage ..... 105 to 120 volts, 60 cycle, AC
Power Consumption at 117 volt line 10L41 ..... 190 watts
- 10L42 ..... 255 watts
- 10L43 ..... 190 watts

Chassis Variations

10L41—Basic chassis in conventional cabinetry

10L42—Similar to 10L41 chassis except two silicon rectifiers and with stepper operated touch tuning, pre-set fine tuning and remote control. For service information on the RC-50 remote control, refer to Manual PR-3330.

10L43—Similar to 10L41 chassis except two silicon rectifiers. Modern cabinetry with "Separate" picture tube mounted in plastic shell. Available with either 17" or 21" picture tube. No tone control.

Tuner

| Chassis | VHF Tuner |
|---|---|
| 10L41 | T-100E |
| 10L41P | T-100F |
| 10L42 | T-100A |
| 10L43 | T-100D |

T-100A, E or F ..... Twelve position incremental, VHF only

### TUBE COMPLEMENT

| | | |
|---|---|---|
| S1 | 6AM8A/6AM8 | 3rd V.I.F. - 2nd Detector |
| S2 | 6DE6 | 2nd V.I.F. |
| S3 | 6DE6 | 1st V.I.F. |
| S4 | 6BQ5 | Audio Output |
| S5 | 6DR7 | Vertical Oscillator & Output |
| S6 | 6CS6 | Sound Discriminator |
| S7 | 6U8/6U8A/6EA8 | Sound IF—Noise Inverter |
| S8 | 6CG7 | Horizontal Oscillator |
| S9 | 6AW8A | Vido Output—Sync Separator |
| S10 | 6DA4 | Damper |
| S11 | 6DQ6A | Horizontal Output |
| S12 | 1G3GT | High Voltage Rectifier |
| S13 | 5U4GB (10L41 only) | Low Voltage Rectifier |
| | (2) 500 MA Silicon Diodes (10L42 & 10L43 only) | Low Voltage Rectifier |

### VHF TUNER

| | | |
|---|---|---|
| S1T | 6X8 | Oscillator-Mixer |
| S2T | 6BC8 | RF Amplifier |

### PICTURE TUBE

| | |
|---|---|
| 21EVP4 | 21" Electrostatic Focus C.R.T |
| 17DAP4 | Some Models of 10L43 only (first production) |
| 17DRP4 | Some Models of 10L43 only (later production) |

(17" C.R.T.'s above are not interchangeable as they require different centering magnet assemblies).

### RECEIVER SET-UP CONTROL LOCATIONS

*(Refer to Base View, figure 23*

1. Vertical Linearity—Control located on rear of chassis. Accessible through hole in back.
2. Height—Control located at rear of chassis below vert. lin. Accessible through hole in back.
3. Width—Control located on rear of chassis. Accessible through hole in back.
4. Horizontal Hold Centering—Control located at rear of chassis below width. Accessible through hole in back.
5. Range Switch—Located at right end of chassis (looking at rear). Slide to right for "Normal," to left for "Strong."
6. Fuse—10L41 located on rear of chassis at the left between the power transformer and the high voltage cage. Back must be removed. Use a .7 amp., slow-blow, part number 27-6318-1. 10L42 & 10L43—Fusistor located in front of the power transformer, plug in type. Use part number 33-1366-3.
7. Focus Adjustment—Red lead with insulated connector. Connect to either L25 (B+) or G11 (ground) terminal lugs on V.O.S. panel for best focus.
8. Centering Magnets—10L41 & 10L42. Remove back. Magnets are just to the rear of yoke shield. Rotate by the tabs.
   10L43 using 17DAP4. Remove rear cover of CRT housing. Magnets are mounted on the rear of yoke shield. Top magnet is for vertical centering, left hand magnet is for horizontal centering. Rotate magnets for best centering.
   10L43 using 17DRP4. Remove rear cover of CRT housing. Magnets are just to the rear of yoke shield. Rotate by the tabs.
9. Horizontal Linearity—Remove back (on 10L43 remove rear cover of CRT housing). Magnet is mounted in a bracket to the left of the yoke. Rotate magnet within the bracket for the desired action.

### CHECKING THE HORIZONTAL PHASE COMPARER SELENIUM DIODE (D5 ON V.O.S. PANEL)

When servicing television receivers where the dual selenium diode phase comparer is suspected, a fast and efficient method of checking them is this:—

A 20,000 ohm/volt meter is employed. On the 10K scale the forward resistance (meter connected in the same polarity as the diode) should be a maximum of 6000 ohms. The ratio of the forward resistances of the two diodes should be less than 2 to 1. On the 100K scale the back resistance (meter connecter in reverse polarity to the diode) should be a minimum of 2 megohms.

The center conductor of the phase comparer unit is the common negative.

### HORIZONTAL OSCILLATOR ADJUSTMENT

Allow set to warm up. Tune in a picture.

1. Short out the horizontal ringing coil, T7, by placing a jumper across C37 by jumping L36 and L38.
2. Set the horizontal hold control, VR5, to the center of its range.
3. Adjust the horizontal hold centering control, VR1B, to set the oscillator to the correct horizontal line frequency (to stop the picture; it will not be stable).
4. Remove the shorting jumper from across C37 and adjust the ringing coil, T7, core for stable picture sync.

## VIDEO I-F ALIGNMENT

**AM ALIGNMENT**

CHANNEL SELECTOR—Set tuner to channel 4 position.

SIGNAL INJECTION—To mixer grid through L4T.

BIAS—6.0 volts to L42. Connect 2:1 voltage divider from L42 to ground. Feed from divider 3 volts to L34.

SCOPE—Connect to video detector output, L43 on V.O.S. panel.

OUTPUT LEVEL—Not greater than 2 volts peak to peak during pole and sweep alignment; not less than 0.2 volts peak to peak during trap alignment.

WARM UP—Allow equipment and chassis 15 minutes warm-up.

1. 45.8 mc Adjust T3T (tuner) for maximum.
2. 41.25 mc Adjust trap VC3 for minimum. Bias may be reduced as minimum is approached.
3. 47.25 mc Adjust traps VC2 and VC4 for minimum. Bias may be reduced as minimum is appoached. Repeat for accuracy.
4. 42.75 mc Adjust VC1 and T2 for maximum.
5. 45.0 mc Adjust T3 for maximum.
6. 44.4 mc Adjust T1 for maximum.

**SWEEP ALIGNMENT**

CHANNEL SELECTOR—Set tuner to channel 4 position.

SIGNAL INJECTION—To the antenna terminals through an antenna matching network (generator to 300 ohm antenna).

Bias, Scope and Output Level same as above for AM alignment.

1. 65.75 mc, AM, 30% modulated to antenna. Tune fine tuning control for minimum output. Do not disturb fine tuning during balance of video I-F sweep alignment. Remove signal.
2. Inject channel 4 sweep signal (69 mc, with 6 mc sweep width) into antenna. If necessary, adjust the following cores to bring the curve within limits (see Overall R-F - I-F Response Curve Fig. 2). Do not change settings of VC2, VC3 or VC4.
3. Adjust 67.25 mc to fall at the 50% point with cores T3T (tuner) and T3.
4. Level curve with core T1.
5. Position 70.50 mc slope with T2 and VC1.

## 4.5 MC TRAP ALIGNMENT

(1) Inject 4.5 MC AM signal into L43 or use station signal.

(2) Connect 4.5 MC detector (see circuit, figure 1) to L26 (pin 7 of CRT).

NOTE: Preliminary padding of 4.5 MC test detector—Connect detector to an accurate source of 4.5 MC signal and pad core of transformer for maximum DC output voltage.

NOTE: When using generator, calibrate by zero beating with sound I-F developed from station signal.

(3) Connect 20,000 ohms/volt meter, set to 2.5 volt range, to detector output.

(4) Turn contrast control fully clockwise (to maximum).

(5) Adjust 4.5 MC trap (bottom core of T6) for minimum indication.

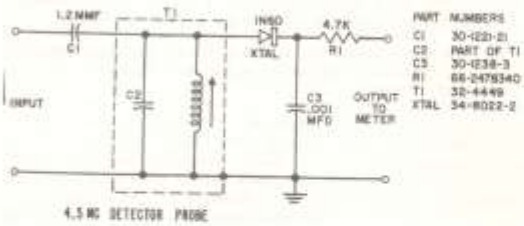



*Figure 1. 4.5 mc Detector Tube*

## SOUND I-F ALIGNMENT

NOTE: The sound I-F alignment is based upon a properly aligned video I-F strip.

(1) With a weak station signal (antenna disconnected) tune receiver for best possible picture. Do not readjust fine tuning control during balance of procedure.

(2) With a strong signal (antenna connected) adjust the quadrature coil T4, for maximum sound.

(3) Connect a VTVM to the audio test point, L24. Be sure voltmeter probe contains an isolation resistor. (If it is required to add a probe isolating resistor, use a value of 10,000 ohms or more.) Using a weak station signal (antenna disconnected), adjust the sound take-off coil (top core of T6) and the sound interstage transformer, T5 (both pri. and sec. cores), for maximum. The station signal employed should not be too weak for this adjustment.

(4) If any signs of intercarrier buzz or noise interference occur, a very slight adjustment of T5 and/or the top core of T6 may be made to minimize the noise. Neither core should be adjusted more than ¼ turn; if more adjustment appears necessary, re-check the sound alignment.

## TUNER OSCILLATOR ALIGNMENT
### T-100 & T-101

AM GENERATOR: Connect to receiver antenna-input terminals (no matching network is required). Use 30% modulated signal.

PRE-SET: Fine tuning control to middle of its range.

OSCILLOSCOPE: Connect to L43, video detector output, on V.O.S. panel.

NOTE: This procedure uses the traps of the video I-F channel. Proper oscillator adjustment is therefore dependent upon an accurately aligned I-F strip.

| STEP | AM. GEN. FREQ. | TUNER POSITION | ADJUST FOR MIN. |
|---|---|---|---|
| 1 | 209.75 mc | Channel 13 | T5T |
| 2 | 203.75 mc | Channel 12 | VC4T |
| 3 | 197.75 mc | Channel 11 | VC5T |
| 4 | 191.75 mc | Channel 10 | VC6T |
| 5 | 185.75 mc | Channel 9 | VC7T |
| 6 | 179.75 mc | Channel 8 | VC8T |
| 7 | 173.75 mc | Channel 7 | VC9T |
| 8 | 81.75 mc | Channel 6 | T10T |
| 9 | 75.75 mc | Channel 5 | T9T |
| 10 | 65.75 mc | Channel 4 | T8T |
| 11 | 59.75 mc | Channel 3 | T7T |
| 12 | 53.75 mc | Channel 2 | T6T |

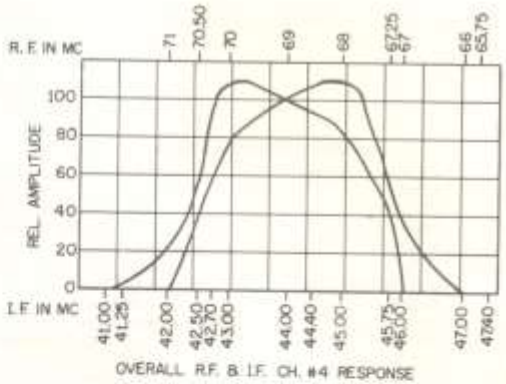



*Figure 2. Overall R-F I-F Response Curve, Channel 4*

## TUNER BANDPASS ALIGNMENT TABLE

SWEEP (FM) GENERATOR: Connect to receiver antenna input circuit through an antenna-input matching network (generator to 300 ohm antenna).

SCOPE: Connect a high gain scope to L6T (mixer screen by-pass). Connect the ground lead to a convenient tuner ground near the test point.

RANGE SWITCH: Set to "NORMAL" position.

BIAS: Inject—1.5 volts to L34 (tuner A.G.C. terminal on the video-sound panel).

TUNER CIRCUIT ALTERATION: De-tune tuner I-F pole (T3T) by shunting with a condenser (approx. 10 to 20 mmf) or by swamping T3T with a resistor (approx. 470-1000 ohms) shunted across the coil.

| STEP | SWEEP (FM) GENERATOR | | RECEIVER TUNING | ADJUST | REMARKS |
|---|---|---|---|---|---|
| | SWEEP DIAL SETTING | MARKER DIAL SETTING | | | |
| 1 | Channel 13 (213 mc., with 10-mc. sweep width) | Set first to 210 mc. and note position of marker on reponse curve. Then set to 216 mc. and note position of marker on reponse curve. | Channel 13 | Adjust Antenna Coil T-25 for maximum output. When interstage is set properly, antenna coil should just reach curve. Once this is set proceed with interstage adjustments. | Use oscilloscope gain as high as possible with respect to hum level and "bounce." Pips fix channel limits on curve. Response curve should be flat between limits (See figure 3A). If not, proceed with step 2. |
| 2 | Channel 13 | 213 mc. | Channel 13 | Adjust T17 and T11 alternately to give a symmetrical response about 213 mc. Adjust T17 first to set carrier level then adjust T11 for proper tilt. | CAUTION: Care must be taken not to unscrew core far enough to make it drop out of the coil. |
| 3 | Channel 7 (177 mc., with 10-mc. sweep width) | Set first to 174 mc. and note position of marker on response curve. Set to 180 mc. and note position of marker on response curve. | Channel 7 | | Note curve with respect to tilt and center frequency. Curve should be centered in pass band and symmetrical. If not, proceed with step 4. |
| 4 | Channel 7 | 174 mc. and 180 mc. | Channel 7 | VC1 and VC2 to obtain correct tilt on top of curve. | VC-1 and VC-2 compensate for the tuning effect of Channel 13 adjustment upon Channel 7 (See figure 4). |
| 5 | Channel 13 | 213 mc. | Channel 13 | Retouch T17 of WS3 and T11 of WS2 for symmetrical response, centered about 213 mc. markers. | To retouch, only turn cores slightly. |
| 6 | Channel 7 | 174 mc. and 180 mc. | Channel 7 | Repeat step 4. | Check response curve for correct center frequency and symmetry. |
| 7 | | | | Repeat steps 5 and 6. | Repeat Channel 13 and Channel 7 adjustments alternately, until favorable curves are obtained on both. |
| 8 | Channel 6 (85 mc., with 10-mc. sweep width) | Set first to 82 mc. and note position of marker on response curve. Then set to 88 mc. and note position of marker on reponse curve. | Channel 6 | | Curve should be symmetrical and centered in pass band (See figure 3B). If not, proceed with step 9. |
| 9 | Channel 6 | 85 mc. | Channel 6 | T16 of WS2 counterclockwise until single peak appears. | CAUTION: Care must be taken not to unscrew core far enough to make it drop out of the coil. |
| 10 | Channel 6 | 85 mc. | Channel 6 | T22 of WS3 until peak falls on 85 mc. marker. | It may be necessary to increase sweep-generator output. |
| 11 | Channel 6 | 85 mc. | Channel 6 | T28 of WS4 for maximum curve height and symmetry of single peak. | |
| 12 | Channel 6 | 85 mc. | Channel 6 | Retouch T22 of WS3 & T16 of WS2 for symmetrical response, centered about 85 mc. marker. | To retouch, only turn cores slightly. |
| 13 | UHF I-F (43.5 mc., AM) | | UHF | T11A for a flat response. | Connect generator to UHF input cable. Tuner T101 only. |

NOTE: All symbol numbers referred to in chart above should have suffix "T."

## TUNER BANDPASS ALIGNMENT CURVES

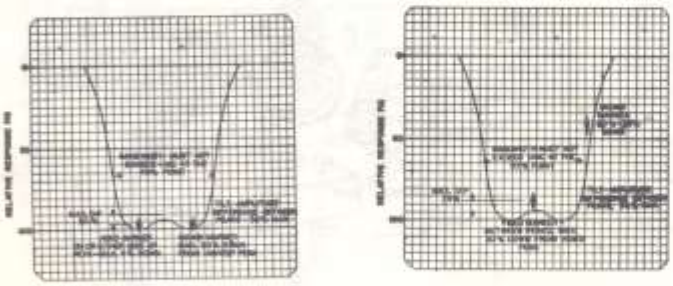


*Fig. 3A and 3B. Television Tuner Response Curve, Showing Bandpass Limits*

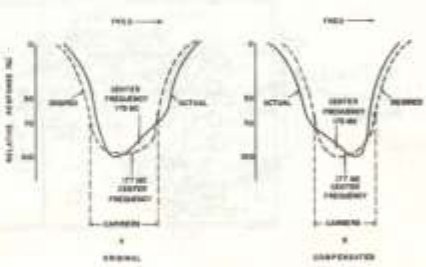


*Fig. 4. Television Tuner Response Curve, Showing Tracking Compensation at Channel 7*

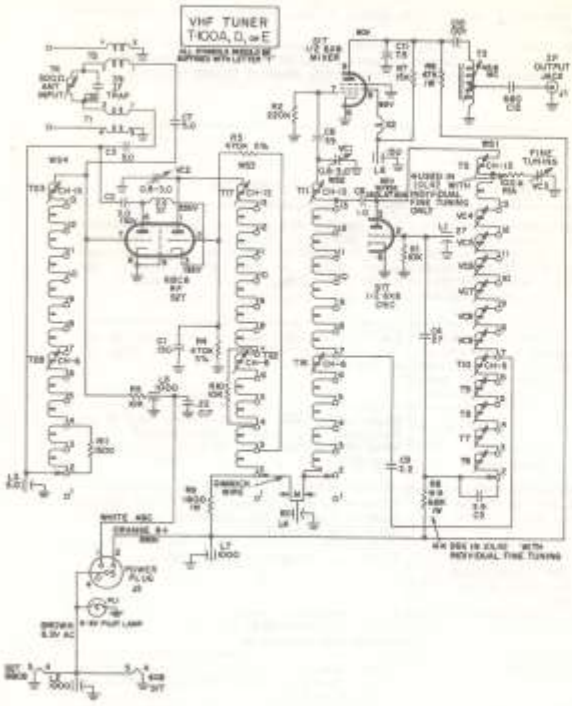



*Figure 5. T-100A, D or E Tuner Schematic*

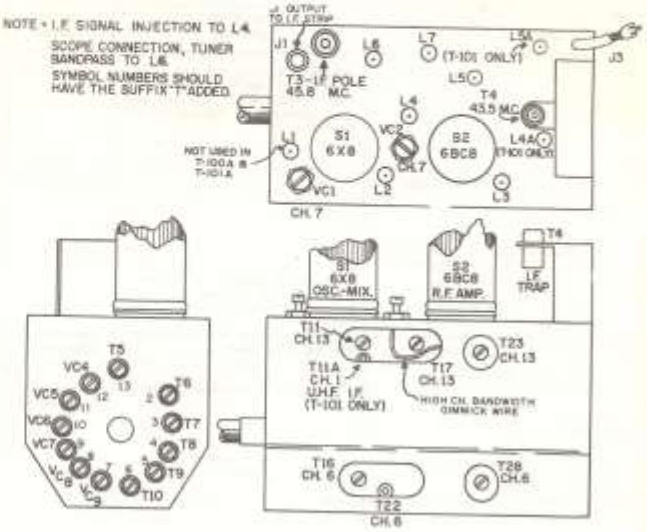



*Figure 6. VHF Tuner Adjustment Locations, T-100 and T-101*

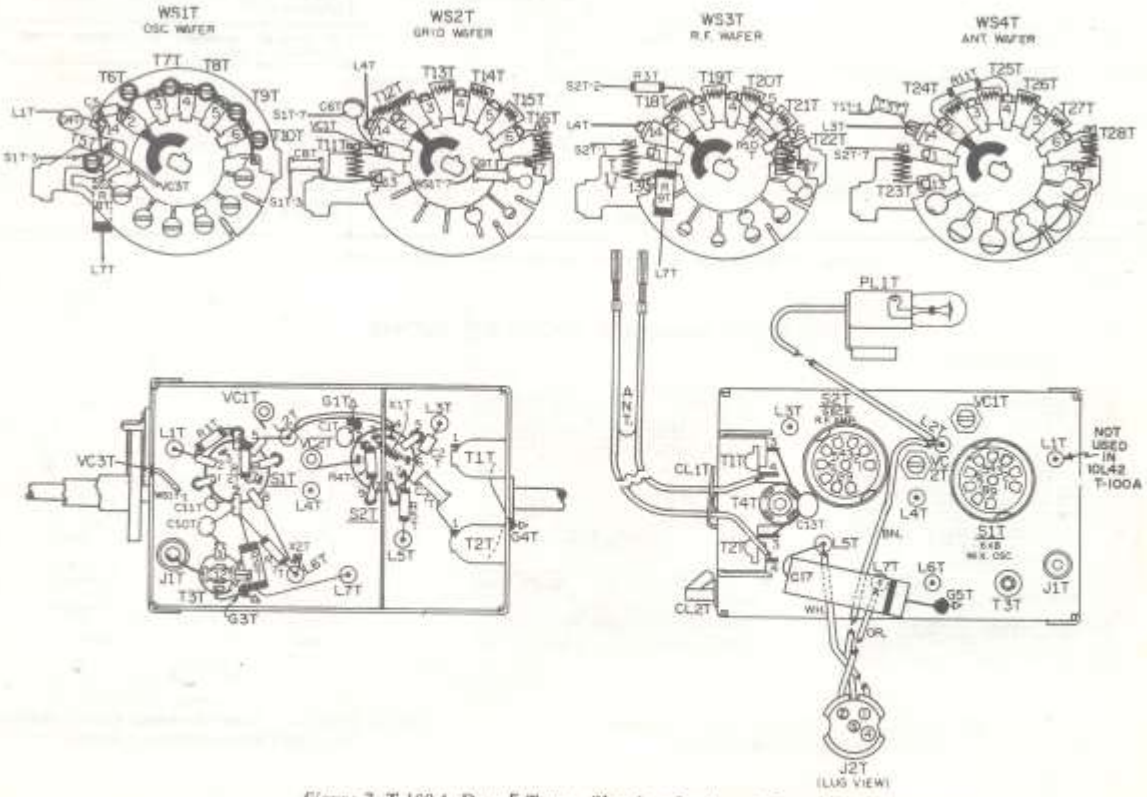



*Figure 7. T-100A, D or E Tuner—Showing Component Layout*

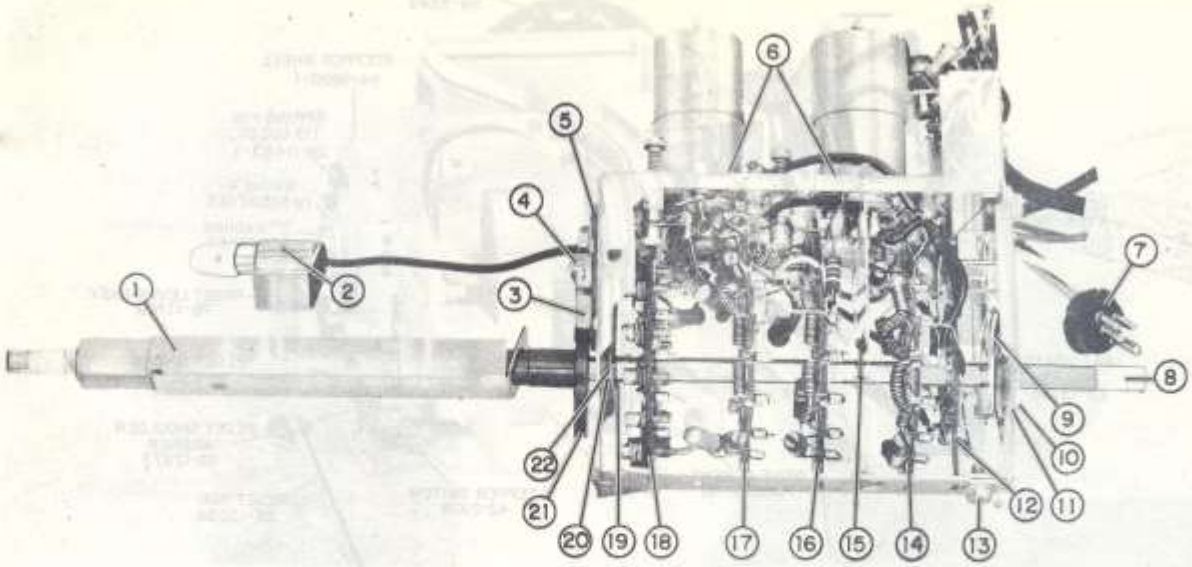
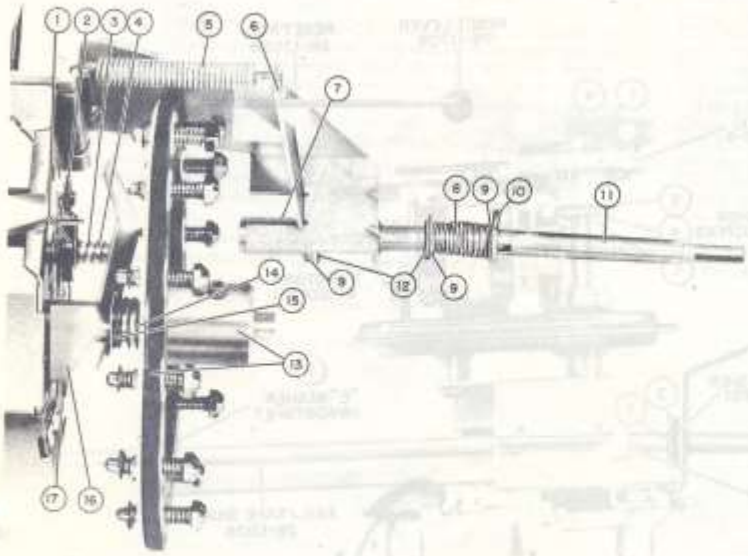



*Figure 10. Tuner T-101—Photo Showing Mechanical Components*

The tuner mechanical parts are called out in the photo above. The description and part numbers are given in the list below.

1. Fine Tuning Shaft
   - T-100D ..... 28-12114-13
   - T-100E ..... 28-12114-14
   - T-100A & T-100F ..... Not Used
2. Pilot Lamp Socket
   - T-100A & E ..... 76-2142-6
   - T-100D ..... 76-2142-24
3. Capacitor Disk ..... 28-11835
   - T-100A ..... Not Used
4. Stator Spring ..... 28-11854
   - T-100A ..... Not Used
5. Insolator ..... 54-6375
   - T-100A ..... Not Used
6. Socket and Shield Assy. ..... 27-6523-7
7. Tuner Power Plug ..... 27-6502-18
8. Switch Shaft Assy.
   - T-100A ..... 76-11451-11
   - T-100D ..... 76-11451-9
   - T-100E ..... 76-11451-10
   - T-100F ..... 76-10559-10
9. Detent Ball ..... 56-8020
10. "E" Washer ..... 1W60980FA3
11. Flat Washer ..... 56-9351
12. Auxiliary Antenna Wafer, WS5
    - T-100A, D & E ..... Not Used
13. Drive Screw ..... 1W19907FA1
14. Antenna Wafer, WS4
    - T-100A & E ..... 76-10554
    - T-100D ..... 76-11498
15. Shaft Grounding Spring ..... 56-8023
16. RF Wafer, WS3
    - T-100A, D & E ..... 76-11712
17. Mixer Grid Wafer, WS2
    - T-101A, D & E ..... 76-10556
18. Oscillator Wafer, WS1 ..... 76-10108
19. Retaining Spring ..... 57-1468
20. Spring Washer ..... 28-12265-56
21. Dielectric Cam ..... 54-6644
    - T-100A & T-100F ..... Not Used
22. Flat Washer ..... 56-9551-3

For Pre-Set Fine Tuning and Stepper parts used in T-100A & T-100F Tuners See Figures 13, 14, 15 and the parts list.




1. Plunger Tube ..... 54-4898-2
2. Plunger Hair Pin ..... 28-12976
3. Plunger Spring ..... 28-13086
4. Plunger Assy. ..... 76-11705
5. Arm Spring ..... 28-12772-1
6. Arm ..... 28-13053
7. Wrench ..... 28-13056
8. Wrench Spring ..... 28-12904
9. Washer ..... 1W52505FA3
10. Cotter Pin
11. Wrench Extension Shaft ..... 28-13074-3
12. "E" Washer ..... 1W60979FE7
13. Pre-Set Plate and Screw Assy. ..... 76-11735-1
14. Lever Spring ..... 28-12925
15. Washer
16. Fine Tuning Lever ..... 28-13054
17. Lever Stabilizing Spring ..... 28-13249

*Figure 13. Pre-Set Fine Tuning Assembly, T-100A & T-100F*

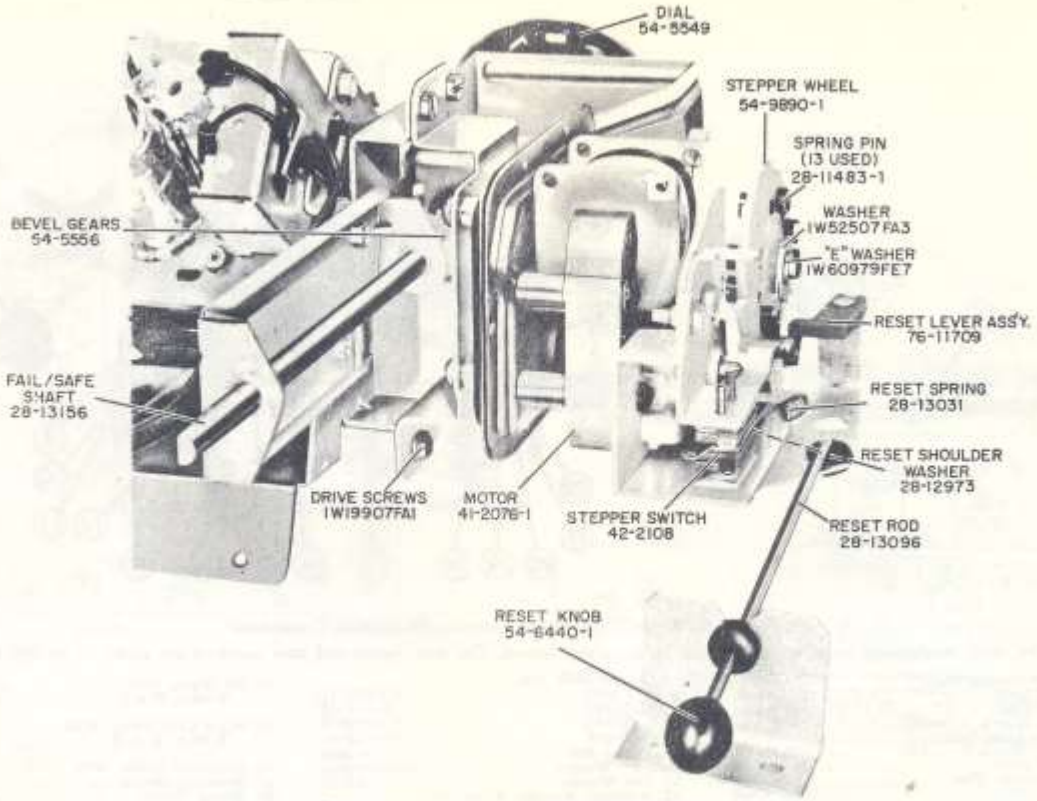



*Figure 14. Stepper Assembly Part Identification*

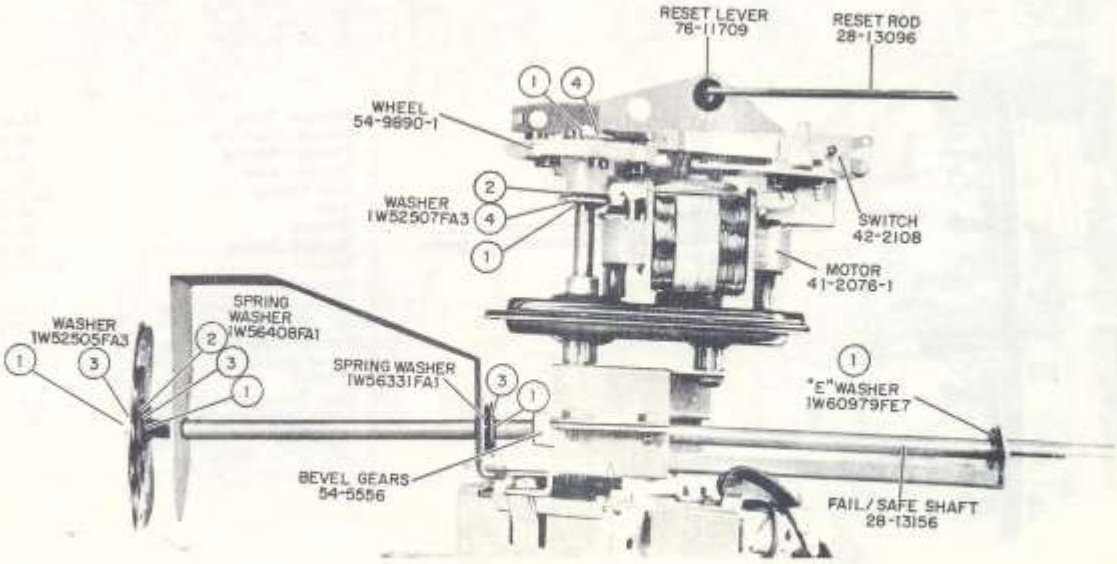



*Figure 15. Stepper, Channel Indicator, Reset and Fail-Safe Assemblies*

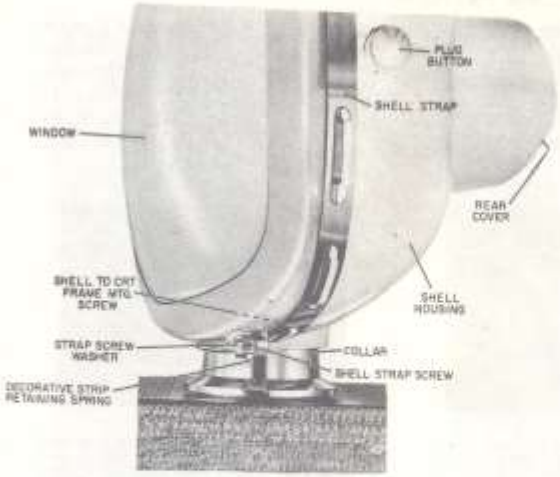



*Figure 16. 10L43 CRT Assembly*

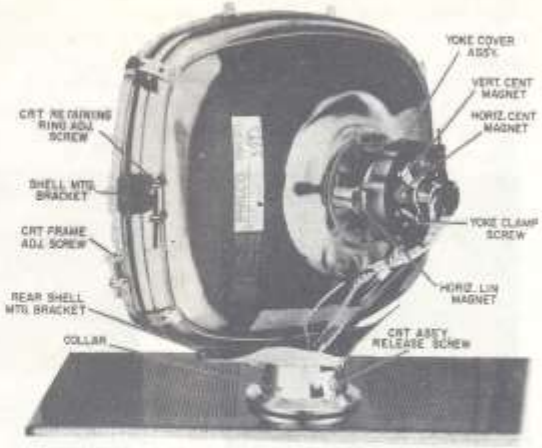



*Figure 17. 10L43 CRT Assy., Shell Removed*

## 10L42 TUNER ASSEMBLY ADJUSTMENTS

CHANNEL INDICATOR—Check tuner channel position. Remove safety glass and mask from cabinet. Rotate channel indicator dial for proper number. Adjust pilot lamp socket assembly for proper centering and focus.

STEPPER WHEEL—Operate stepper by push button switch. Stepper unit must stop coincident with tuner detent. Rotate stepper wheel so that the spring pin of the wheel is in contact with the switch leaf. Adjust the switch mounting bracket so that the stepper motor contacts open between .001" & .005" when switch leaf is contacting a spring pin.

FAIL-SAFE INDEX—Set tuner to channel nine, index marks on the bevel gears of the tuner and Fail-Safe shafts must match. To change mesh of gears, remove the two hex drive screws that mount the Fail-Safe assembly, rotate the Fail-Safe knob until the gear index marks line up, mesh gears and replace drive screws.

PRE-SET FINE TUNING PLATE—Plate should be down on shaft and bottomed against the shaft spacer. Set screw tightens against a flat on the switch shaft. Be sure that the Pre-Set screws, with tuner detented, contact the flat, highest portion of the fine tuning lever. If screws miss lever, loosen set screw, rotate plate assy. 180° and retighten.

PRE-SET WRENCH ALIGNMENT—Wrench should be centered directly above the screw heads. Wrench must clear screw heads when screw is in maximum out position. If necessary reposition bracket.

LUBRICATION—Use Lubriplate—*not* oil. Use just enough to lightly coat parts without excess.

1. Inside of Pre-Set wrench and heads of the screws.
2. Surfaces of fine tuning lever where screws ride and fine tuning plunger is in contact. Also the contacting end of the screws.
3. Surfaces of Reset Lever where it contacts shoulder washer and mounting bracket.

## DISASSEMBLY OF CRT HOUSING—CRT REMOVAL PROCEDURE

Access to the yoke and its associated parts is obtained by removing the small cover plate on the rear of the CRT shell. The cover is secured by four screws. Removal of the cover exposes the CRT socket and the yoke assembly. This permits adjustment of the yoke, vertical and horizontal centering magnets and the horizontal linearity adjustment without removing the rear shell.

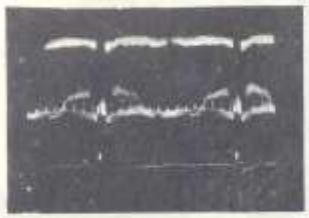
To disassemble the CRT assembly, remove the ornamental trim piece under the picture tube by removing the two small screws from the lower front. Remove the plastic trim strip around the CRT shell. This trim strip is held in place with a spring at the bottom of the assembly. Remove the two screws retaining the metal shell strap, remove the strap and the window. Remove the two brass plug buttons, one on each side, and then remove the two screws which fasten the sides of the rear shell to the CRT frame. Remove the two mounting screws at the bottom of the CRT which hold the rear shell, remove the rear shell. The CRT is still secured by the pivot assembly to the cabinet. See figure 17. The yoke and CRT cables plug into receptacles on the chassis. The anode lead plugs into a jack on the 1G3GT socket.

The CRT may now be removed by loosening the bolts, one on either side of the CRT front frame, near the side arm brackets. The CRT is now free to be removed from the front. When replacing, it may be necessary to first loosen the ring screw (on 17" tubes) or the two rear strap screws at the bottom (on 21" tubes) to allow for slight differences in CRT bell dimensions.

If desired, the pivot or swivel assembly (with or without the CRT mounted) may be removed by removing the single CRT release screw at the rear of the collar and then lifting the assembly off the cabinet.

## OSCILLOSCOPE WAVEFORM PATTERNS

These waveforms were taken with the receiver adjusted for an approximate peak-to-peak output of 4.0 volts at the video detector. The voltages given are approximate peak-to-peak values. The frequencies shown are those of the waveforms—not the sweep rate of the oscilloscope. They were taken with an oscilloscope having good high-frequency response. With oscilloscopes having poorer response, the peaks of the horizontal waveforms wll be more rounded than those shown, and the peak-to-peak voltages will differ. Measurements given below were taken with range switch in normal position. At the 2nd det. output there is approximately a 3:1 decrease when switch is in strong position.

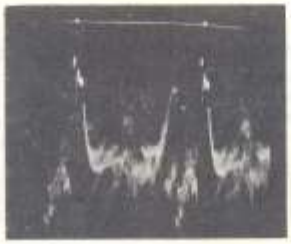


(1) Composite video, 2nd detector output, L43 (on V.O.S. panel), 5.0 volts in "Normal," 1.5 volts in "Strong," 60 c.p.s.

(2) Composite video, 2nd detector output, L43 (on V.O.S. panel), 5.0 volts in "Normal," 1.5 volts in "Strong," 15,750 c.p.s.

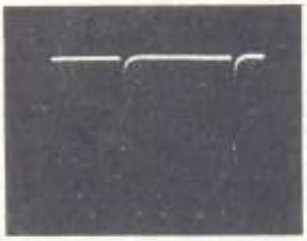
(3) Composite video, video output plate (pin 9 of 6AW8A, S9) or L26, 60 volts at min. contrast, 130 volts at max. contrast. At noise inverter grid (pin 9 of 6U8, S7) 100 volts at max. contrast. 60 c.p.s.

(4) Composite video, noise inverter plate (pin 1 of 6U8, S7), 115 volts at max. contrast, 15,750 c.p.s.

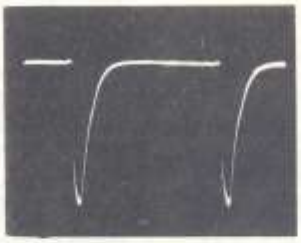


(5) Composite video, sync separator grid (pin 2 of 6AW8A, S9) 100 volts, 60 c.p.s.

(6) Composite video, sync separator grid (pin 2 of 6AW8A, S9) 100 volts, 15,750 c.p.s.



(7) Sync separator output, plate of 6AW8A (pin 3 of S9) or terminals L14 or L31, 44 volts, 60 c.p.s.

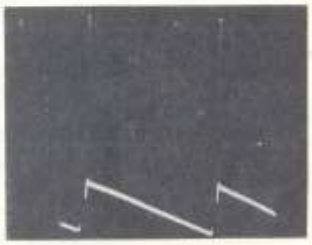


(8) Sync separator plate (pin 3 of S9) or terminals L14 or L31, 44 volts, 15,750 c.p.s.

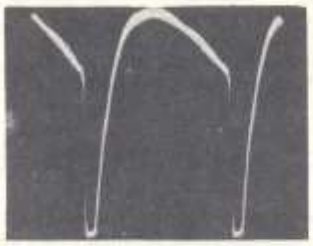
(9) Vertical oscillator plate (pin 6 of 6DR7, S5), 100 volts or vertical output grid (pin 3 of 6DR7, S5), 110 volts, 60 c.p.s.

(10) Vertical oscillator grid (pin 7 of 6DR7, S5) or lug 4 of N2, 60 volts, 60 c.p.s.

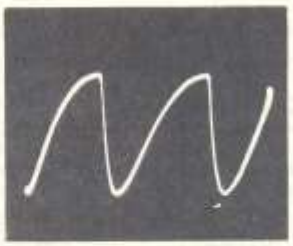
(11) Vertical oscillator cathode (pin 8 of 6DR7, S5), 14.5 volts, 60 c.p.s.



(12) Vertical output plate (pin 1 of 6DR7, S5) or terminal L15, 750 volts, 60 c.p.s.

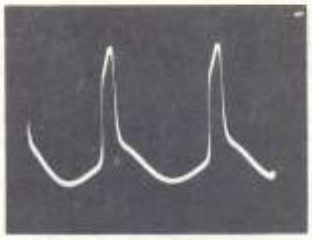


(13) Horizontal phase comparer cathode, lug 2 of N5, 10 volts, 15,750 c.p.s.

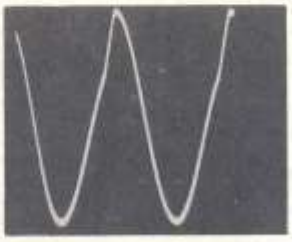


(14) Horizontal phase comparer plate, lug 5 of N5, 15 volts, 15,750 c.p.s.

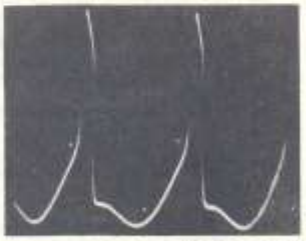
(15) Horizontal oscillator cathode (pins 3 and 8 of 6CG7, S8), 17 volts, 15,750 c.p.s.



(16) Horizontal oscillator plate (pin 1 of 6CG7, S8), 57 volts, 15,750 c.p.s.



(17) Horizontal oscillator test point, terminal L36, 25 volts, 15,750 c.p.s.



(18) Horizontal buffer grid (pin 7 of 6CG7, S8), 50 volts, 15,150 c.p.s.

(19) Horizontal output grid (pin 5 of 6DQ6A, S11) or horizontal oscillator buffer plate (pin 6 of 6CG7, S8), 153 volts, 15,750 c.p.s.

(20) Horizontal output plate, loosely coupled to plate lead, 15,750 c.p.s.

## RUN CHANGE INFORMATION

### Chassis

Run 1 First production of 10L41 and 10L43.

Run 2 Added a 27 mmf condenser, part number 30-1224-126, from the audio output grid, L16, to ground, G10, for audio parasitic suppression. This added condenser has symbol number C16A.

Run 3 C16A, added in Run 2, is removed. The V.O.S. panel changes to Run 2, red dot.

Run 4 The V.O.S. panel changes to Run 3, orange dot. In 10L43 only a black wire is added from VR8-4, bottom of volume control, to G20 to reduce sound beat. G20 is an added ground lug behind mounting nut of VR8.

Run 5 The Video IF panel changes to Run 2, red dot. Also, to reduce vertical shading, a 6800 ohm resistor R65 is added between CRT-3 and lug 1 of V.O.T. a .01 ufd condenser, part number 30-1238-6, C45, is added berwen the CRT grid end of the new resistor and ground.

10L42 This chassis will start production as Run 5 and will have the same run number as the 10L41 and 10L43.

### V.O.S. Panel

Run 1 First production. No panel color dot.

Run 2 A 100 ohm parasitic suppression resistor, part number 66-1108340, is added in series with the audio output grid (between the grid and L16). The symbol of the added resistor is R19A. The copper foil in the vicinity of S4-2 and L16 is modified and two additional holes punched for R19A.

The copper foil in the vicinity of S7 and R50 is modified to move R30 away from the shield of S7.

The Perma-Circuit panel becomes revision C, part number 54-6994-2.

Run 3 To improve audio quality, C17 changes to .0082 ufd, GMV, disk, part number 30-1262-1.

To improve heat dissipation of R15A, the resistor wattage rating is increased to 3 watts, part number 33-1363-39.

### Video IF Panel

Run 1 First production. No panel color dot.

Run 2 To improve signal to noise ratio. N1, the 2nd cathode resistor-condenser network, is changed to 30-6039-2. The capacitor section is changed to 12$\mu\mu$f.

## CRITICAL LEAD DRESS INFORMATION

A. *To Prevent Corona*

(1) High Voltage rectifier socket, S12, must be free of solder points and sharp wire ends.

(2) Plate cap of 1G3GT must be at least ¾" from any metal of high voltage cage.

(3) Filament leads from H.O.T. to S12 must have slack (if any) dressed down to base away from the glass bulb of the 1G3GT tube.

(4) All leads from H.O.T. coil to the yoke socket, Y.S., must be free of each other and dressed away from any metal parts.

(5) Plate cap lead of 6DQ6A, S11, must be dressed at least ½" away from H.O.T. winding.

(6) Leads from yoke socket lugs 8, 9 and 11 and the brown damper lead must be dressed under lugs CL1A and CL2 and away from winding of H.O.T.

(7) Plug-in anode lead must dress through hole in high voltage cage and under filament leads from H.O.T. Anode lead must not touch glass bulb of 1G3GT.

(8) All leads must be dressed clear of V.O.S. panel tie lug L45 and damper socket, S10-5, the damper cathode.

B. *To Prevent Pinched Leads*

(9) Leads from IF panel tie lugs L1, L2, L3, L5, L6 and L7 must dress through the nearest cut-outs provided in the IF shield.

(10) All leads from Y.S. must dress through cut-out provided in H.V. cage, between wiring panel B1 and dress lug CL8, under C42, away from end of IF shield, and under panel B1 at B1-10 to their respective wiring points.

(11) All leads in region between IF panel and H.V. cage must dress between the filter choke, F.C., and IF panel under dress lugs CL8 and CL9.

(12) All leads from on-off-volume-contrast control and secondary controls must dress through CL18 and under lugs CL12, CL11, CL3 and CL1 to their respective wiring points.

C. *To Prevent Lead Burning*

(13) All leads must be dressed away from hot resistors WR4, WR5 and F2 (F2 is in 10L42 and 10L43 only).

(14) Tuner power cable must dress under CL15 and CL16.

(15) CRTS cable must dress under CL19. Brown lead of CRTS cable, in 10L41 chassis, must dress between S7 and T6, N6 and L37 to B1-5. Green lead of CRTS, in 10L41 chassis, must dress through cut-outs provided in rear of subbase near SW1 and under dress lugs CL1, CL3 and CL11 to V.O.T.-1. Brown and green leads are on J3 in 10L42 and 10L43 chassis.

D. *To prevent Pick-Up*

(16) Bare portion of IF link cable to tuner must be clamped under dress lug provided at end of IF shield.

(17) Yellow CRTS lead should be free of all other leads.

(18) Green lead from L1 to L43, the video second detector output connection, should be free of all other leads and away from subbase.

E. *To Prevent Vertical Bounce*

(19) Blue wire from A.O.T. must dress under CL12, CL11 and CL3 and must not touch N2, the vertical oscillator component pack.

F. *To Protect Silicon Rectifiers*

(20) Rec. 1 and Rec. 2 should be insulated with a fiber-glass sleeve and dressed loose (½" of lead between body and solder point) and should be dressed away from wiring panel (10L42 and 10L43 chassis only).

G. *To Prevent De-Padding of Sound*

(21) All leads must be dressed clear of the quadrature coil, T4, and condenser C21 across coil T4. In particular, the black lead and the red lead from CRTS to G11 must dress between T5 and S6 (6CS6), in 10L41 only. In chassis 10L42 and 10L43 these leads go to J3.

H. *Cabinet Wiring Dress*

(22) The anode lead must dress under CL5 lug and must not touch any hot tubes.

(23) IF link cable must dress down to base of cabinet, under tuner dress lug CL11 and must not touch any hot tubes.

(24) Dress C.R.T. cable under CL19 lug.

(25) Yoke cable must dress under CL5 lug with any slack pulled away from C.R.T. yellow lead.

I. *"Separate" Cabinet Wiring Dress*

(26) Yellow CRT lead and yoke cable must not be twisted inside the bubble assy. They must be separated at the base by the fiber barrier.

(27) Yellow CRT lead must dress under lug provided on speaker mounting bolt.

(28) Yoke cable must dress under CL5 and CL2A and must not touch any hot tubes.

(29) On-off-volume control cable must dress under lug on speaker mounting bolt.

(30) Secondary control cable must dress through CL17, along front edge of chassis, under CL17, and under lug which mounts the secondary control bracket.

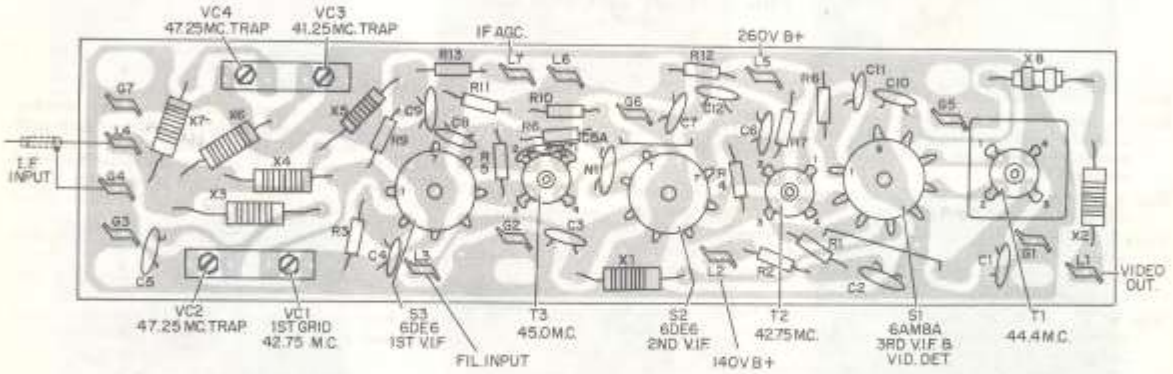



*Figure 18. Video I-F Perma-Circuit Panel*

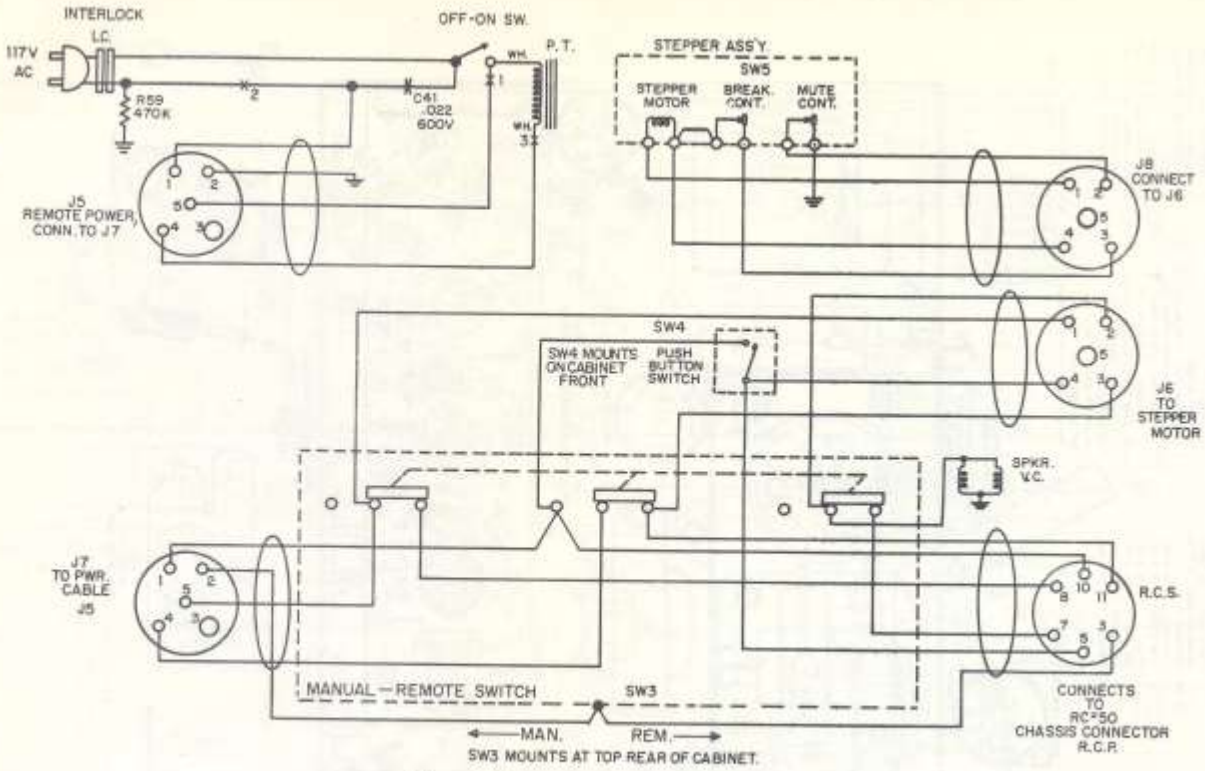



*Figure 19. 10L42 Remote and Stepper Circuits*

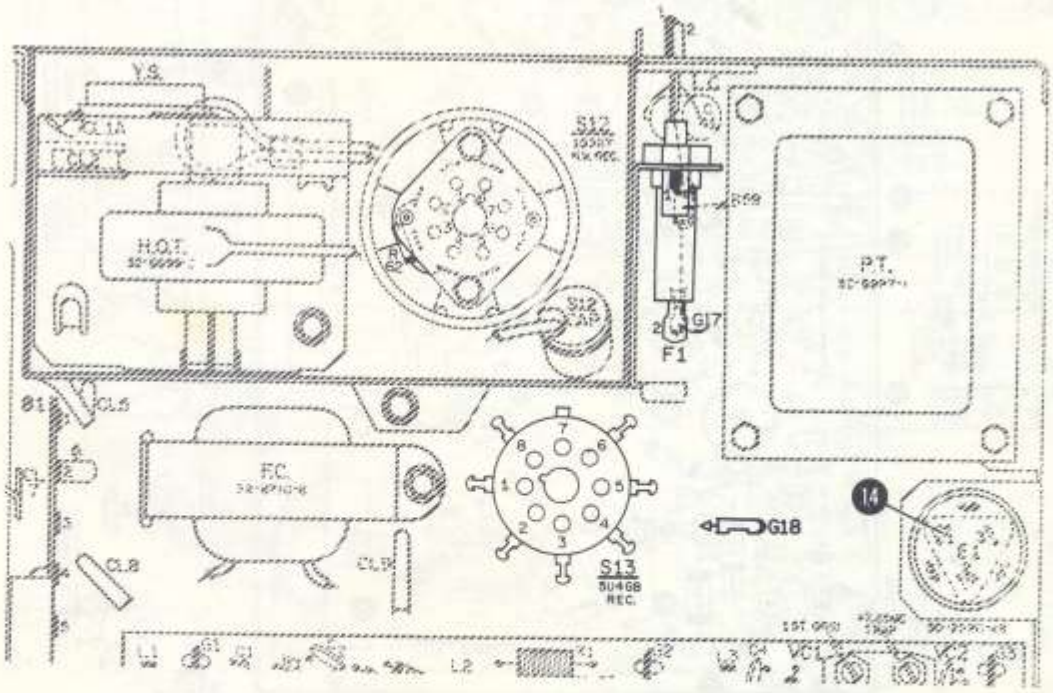



*Figure 20. 10L41 Power Supply Component Placement—See Figure 23 for Complete Layout*

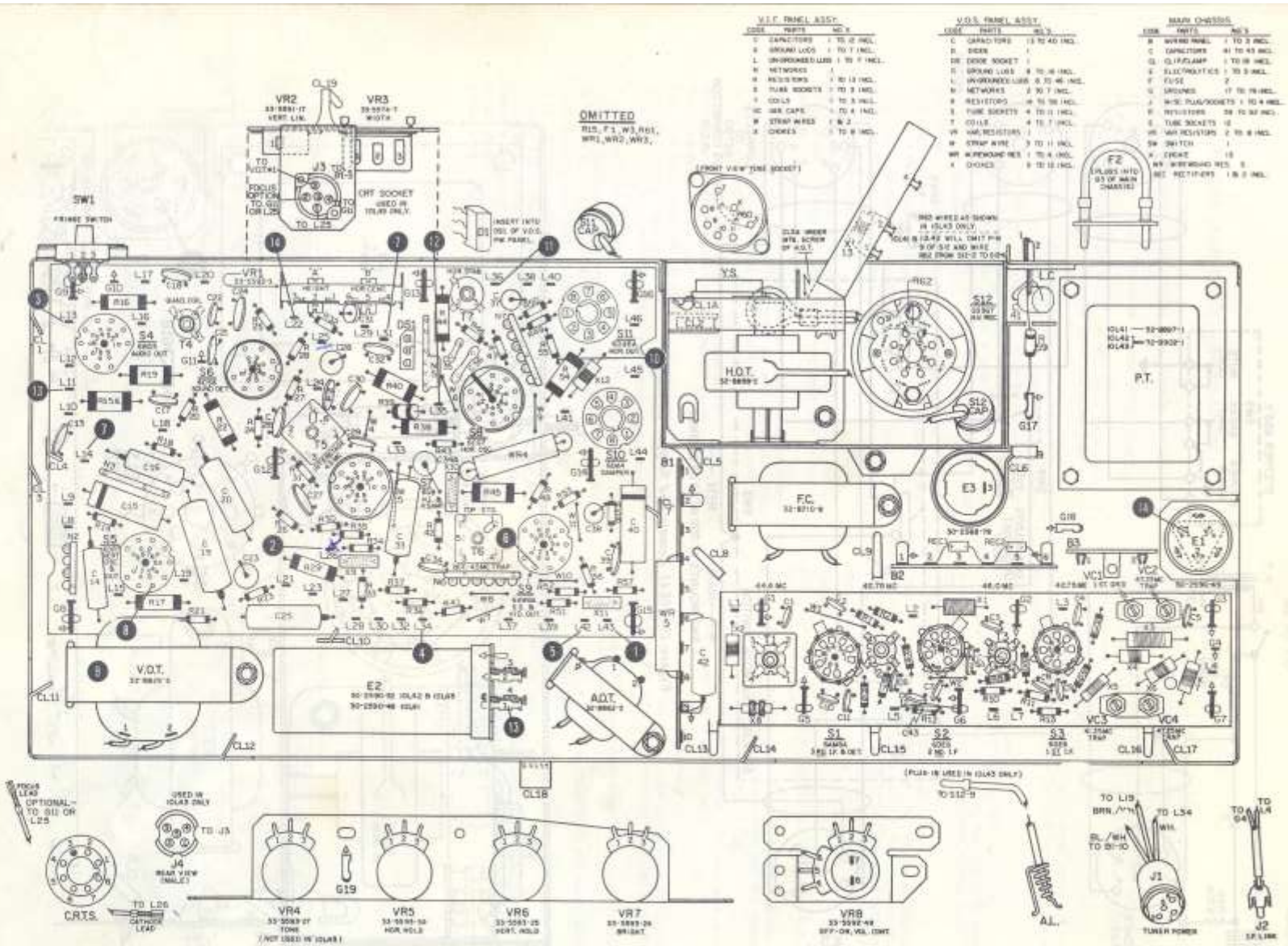



*Figure 23. 10L42 & 10L43—Top View Showing Component Placement*

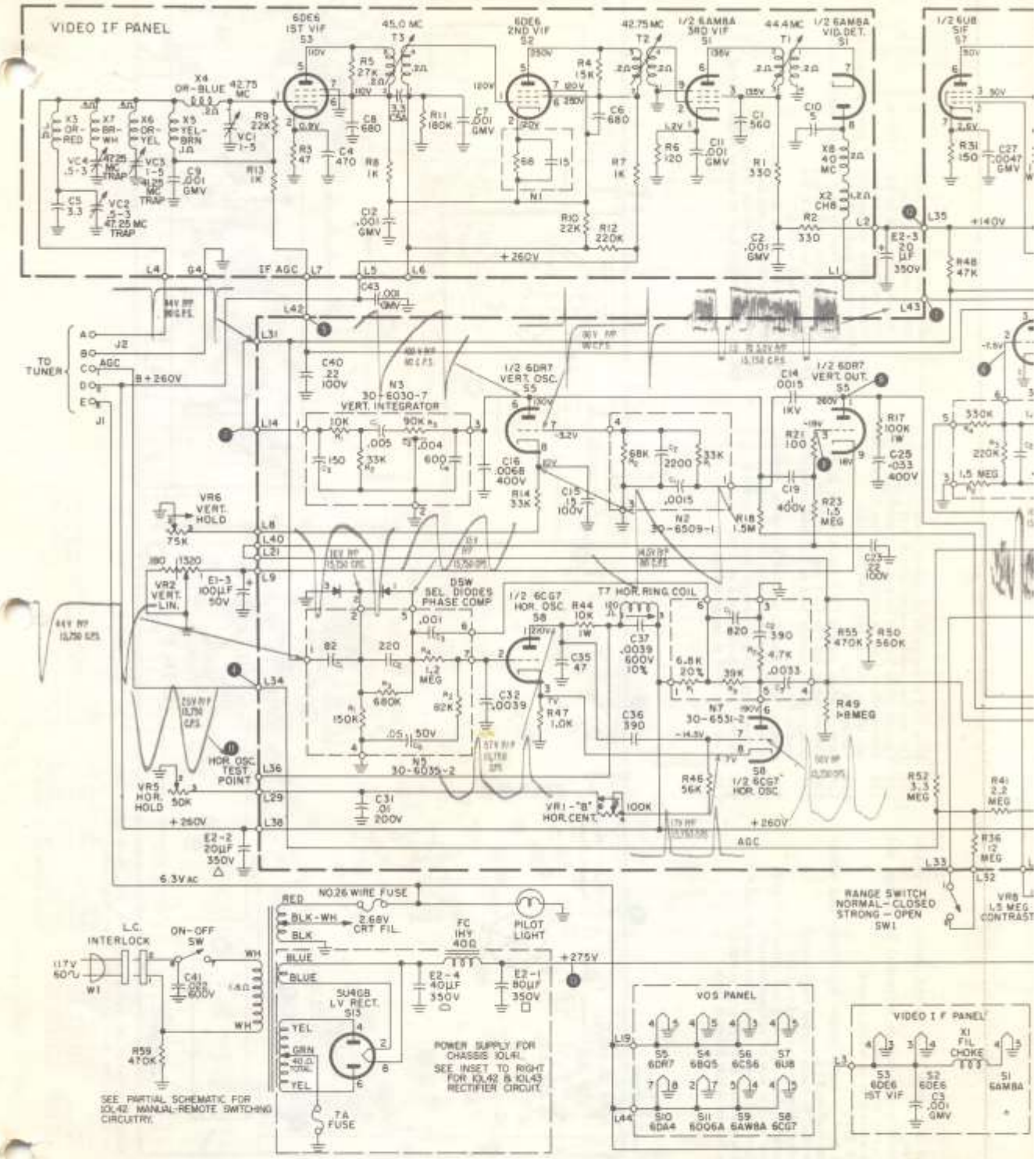
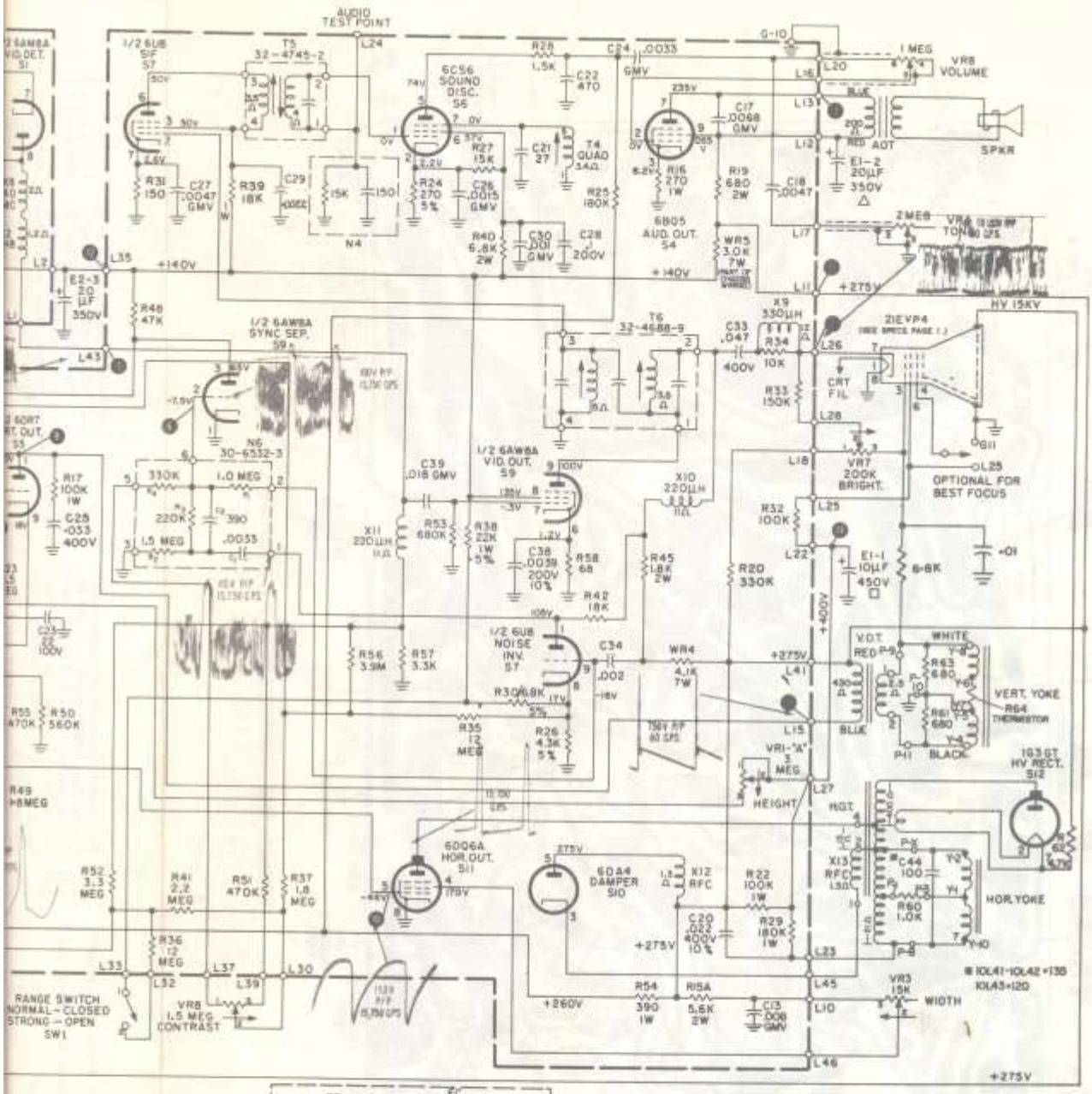





*Figure 24. Schematic Diagram for Chassis 10L41, 10L42 and 10*

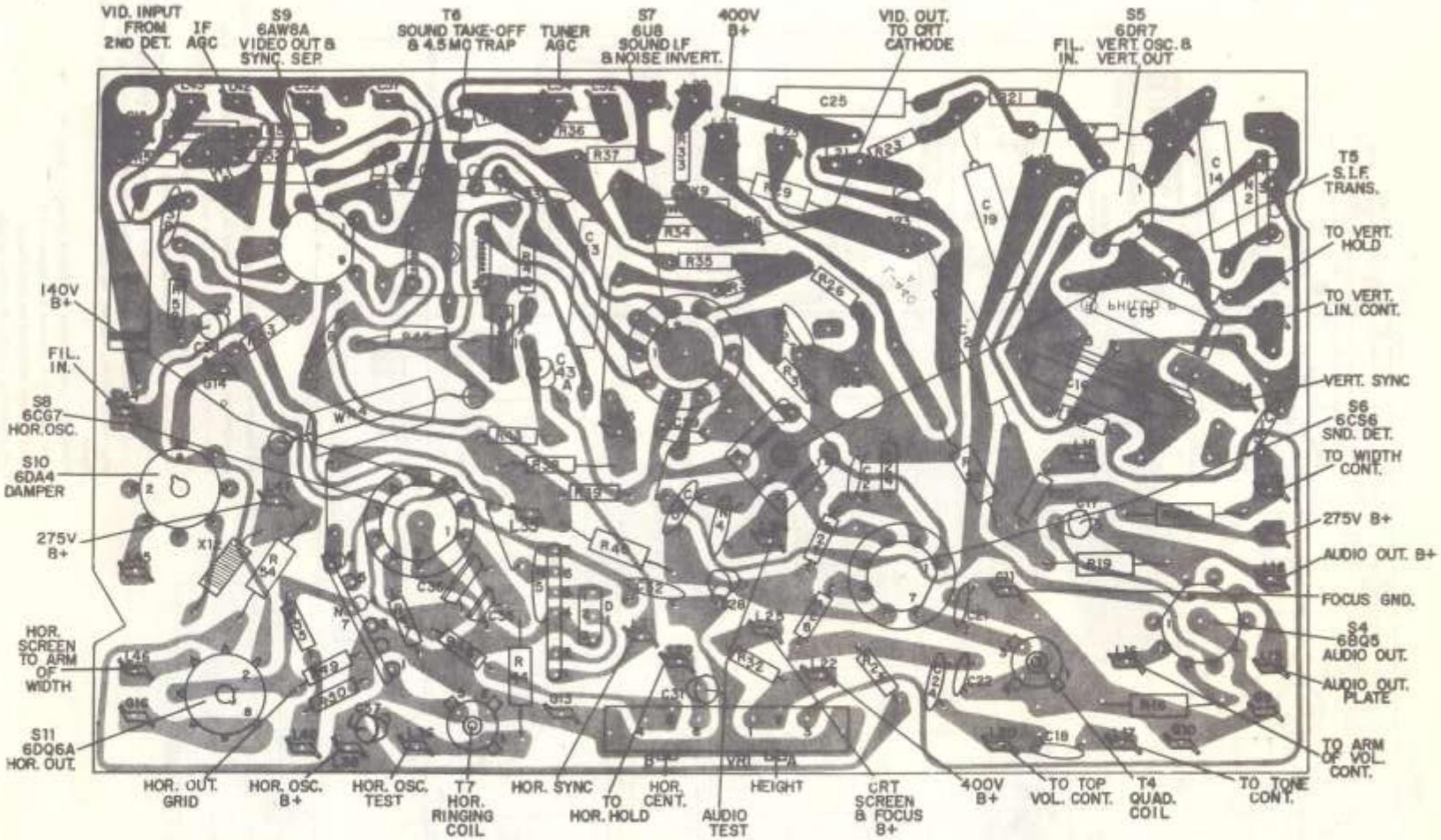



**NOTES:** All capacitor values greater than 1 are in MMF unless otherwise noted.
All capacitor values less than 1 are in MFD unless otherwise noted.
All resistors are ½ watt, 10%, carbon unless otherwise noted.
Arrow through control indicates clockwise rotation.
Voltages are DC from point shown to chassis unless otherwise noted.
Voltages were read using a 20,000 ohms/volt meter. Voltages were taken with no signal. The receiver was adjusted for a good quality picture; i.e., normal contrast, brightness, width, height, vertical lin. and sound, picture in sync, then removed signal.
Waveform measurement conditions given on page 10.
Tuner schematics appear on pages 4 & 5.
Focus voltage optional for best focus.
Coil resistances read with coil in circuit.





Washer, strap mtg. bolt, 2 used ..... 78-11643
Window, front, 17" ..... 78-10671
Window, front, 21" ..... 28-12568
..... 1W52407FA3
..... 54-6985-2




TERMINAL LUG IDENTIFICATION—V.O.S. PANEL

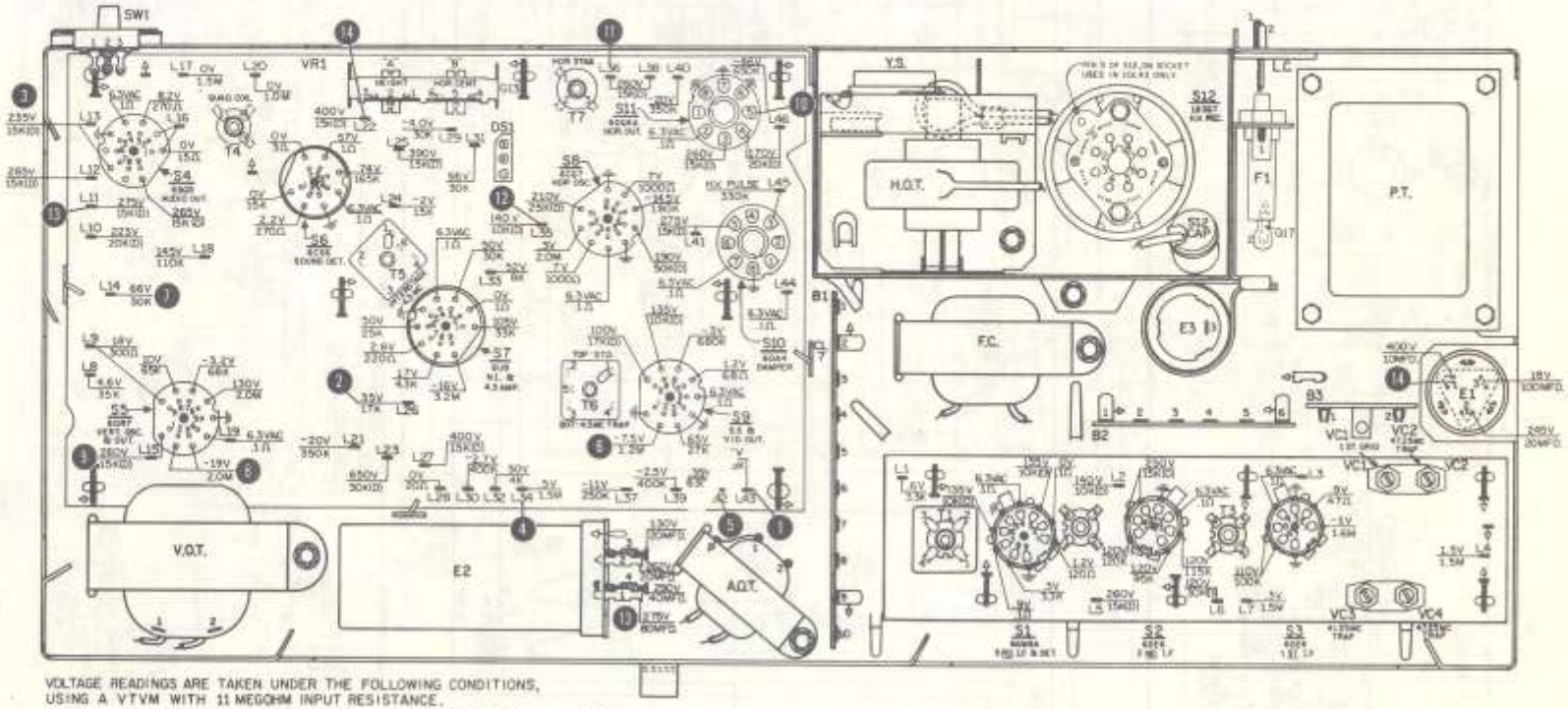
*Figure 21. Video-Oscillator-Sound Perma-Circuit Panel*

L8 Lead to vertical hold control, white with yellow tracer.
L9 Vertical output cathode to vertical lin. control and E1-3, two white leads.
L10 Red/white lead to width control.
L11 270V B+.

L20 Blue lead to high side of volume control.
L21 Output bias, white jumper lead to L40.
L22 Orange/white jumper lead to L27, 400V.
L23 Brown/white lead to yoke socket lug 7. Boost voltage line to H.O.T. lug 1 and hor. yoke.
L24 Audio test lug.

L33 White lead to range switch.
L34 White tuner AGC lead.
L35 Orange/white lead to E2-3, 140V B+.
L36 Hor. oscillator test point.
L37 Yellow/white to low side of contrast control.
L38 Blue/white lead to E2-2.
L39 Blue/white lead to high side of contrast control.

L8 Lead to vertical hold control, white with yellow tracer.
L9 Vertical output cathode to vertical lin. control and E1-3, two white leads.
L10 Red/white lead to width control.
L11 270V B+.
L12 Red lead to audio output transformer and white/green lead to E1-2.
L13 Blue lead to audio output transformer.
L14 White/yellow jumper lead to L31.
L15 Blue/white lead from vert. out. plate to V.O.T.
L16 Green lead to arm of volume control.
L17 Yellow lead to tone control (not used in 10L43).
L18 Red/white lead to brightness control.
L19 Two brown/white filament leads.
L20 Blue lead to high side of volume control.
L21 Output bias, white jumper lead to L40.
L22 Orange/white jumper lead to L27, 400V.
L23 Brown/white lead to yoke socket lug 7. Boost voltage line to H.O.T. lug 1 and hor. yoke.
L24 Audio test lug.
L25 Orange/white lead to CRT pin 6, screen grid.
L26 Yellow/white lead to CRT pin 7, cathode.
L27 Orange/white jumper lead to L22 and orange/white lead to E1-1.
L28 Orange/white lead to arm of brightness control.
L29 Blue/white lead to horizontal hold control.
L30 Green/white lead to arm of contrast control.
L31 Yellow/white jumper lead to L14.
L32 Red/white lead to range switch.
L33 White lead to range switch.
L34 White tuner AGC lead.
L35 Orange/white lead to E2-3, 140V B+.
L36 Hor. oscillator test point.
L37 Yellow/white to low side of contrast control.
L38 Blue/white lead to E2-2.
L39 Blue/white lead to high side of contrast control.
L40 White jumper lead to L21.
L41 Red/white lead, 270V B+.
L42 White lead to IF L7.
L43 Green/white video input lead.
L44 Brown/white filament lead.
L45 Brown damper cathode lead to X13.
L46 Orange/white lead to arm of width control.




VOLTAGE READINGS ARE TAKEN UNDER THE FOLLOWING CONDITIONS, USING A VTVM WITH 11 MEGOHM INPUT RESISTANCE.

| | | | |
|---|---|---|---|
| VOLUME | FULL TURN CCW. | WIDTH | HALF TURN CW. |
| TONE | FULL TURN CCW. | HOR. CENT | HALF TURN CW. |
| CONTRAST | FULL TURN CW. | HEIGHT | HALF TURN CW. |
| BRIGHTNESS | FULL TURN CW. | VERT HOLD | HALF TURN CW. |
| VERT. LIN. | HALF TURN CW. | HOR. HOLD | HALF TURN CW. |
| | | FRINGE SWITCH | LOCAL POSITION. |

NOTE
ALL VOLTAGE & RESISTANCE MEASUREMENTS SHOWN ON THIS DRAWING ARE MADE WITH NO SIGNAL ON ANTENNA AND THE YOKE PLUGGED INTO (YS) YOKE SOCKET.

*Figure 22. Top View Showing Voltage and Resistance Readings*

# REPLACEMENT PARTS LIST

**NOTE: Part numbers may not be identical with those on factory parts; also, the electrical values of some replacement items may differ from the values indicated in the schematic diagram and parts list. The values substituted in any case are so chosen that operation will be either unchanged or improved. When ordering replacements, use only the "Service Part No."**

| Reference Symbol | Description | Service Part No. |
|---|---|---|
| A.L. | Anode lead, 10L41 and 10L42 | 41-4142-20 |
| A.L. | Anode lead, 10L43 | 41-4142-21 |
| A.O.T. | Audio Output Transformer | 32-8862-2 |
| B3 | Fuse contact panel, 10L42 and 10L43 only | 76-11072-1 |
| C1 | Condenser, 3rd IF screen by-pass, 560 uuf, disk | 30-1262-30 |
| C2 | Condenser, IF 140V B+ by-pass, .001 ufd, GMV, disk | 30-1262-11 |
| C3 | Condenser, IF filament by-pass, .001 ufd, GMV, disk | 30-1262-11 |
| C4 | Condenser, 1st IF cathode by-pass, 470 uuf, disk | 30-1262-18 |
| C5 | Condenser, 47.25 MC trap, 3.3 uud, NPO, disk | 30-1263-38 |
| C5A | Condenser, 1st V.I.F. transformer, 3.3 uuf, NPO, disk | 30-1263-38 |
| C6 | Condenser, 2nd IF screen by-pass, 680 uuf, disk | 30-1262-15 |
| C7 | Condenser, 2nd IF grid de-coupling, .001 ufd, GMV, disk | 30-1262-11 |
| C8 | Condenser, 1st IF screen by-pass, 680 uuf, disk | 30-1262-15 |
| C9 | Condenser, IF AGC by-pass, .001 ufd, GMV, disk | 30-1262-11 |
| C10 | Condenser, Vid. detector load, 5 uuf, disk | 30-1263 |
| C11 | Condenser, 3rd IF cathode by-pass, .001 ufd, GMV, disk | 30-1262-11 |
| C12 | Condenser, IF-B+ de-coupling, .001 ufd, GMV, disk | 30-1262-11 |
| C14 | Condenser, vertical feed-back, .0015 ufd, 1KV, moulded | 30-4650-87 |
| C15 | Condenser, vertical oscillator cathode by-pass, .15 ufd, 100V, paper | 30-4695-31 |
| C16 | Condenser, vert. osc. grid charging, .0068 ufd, 400V, moulded | 30-4650-57 |
| C17 | Condenser, audio output plate tone comp. GMV, disk , 0082 ufd | 30-1262-1 |
| C18 | Condenser, tone, ufd, disk .0022 | 30-1262-2 |
| C19 | Condenser, vertical coupling, 1 ufd, 400V, moulded | 30-4650-47 |
| [illegible]0 | Condenser, boost filter, .022 ufd, moulded 600V | |
| C21 | Condenser, quadrature tank, 27 uuf, N330, disk | 30-1263-46 |
| C22 | Condenser, audio filter, 470 uuf, disk | 30-1262-32 |
| C23 | Condenser, sweep output bias filter, .22 ufd, 100V, moulded | 30-4650-49 |
| C24 | Condenser, audio coupling, .0033 ufd, GMV, disk | 30-1262-4 |
| C25 | Condenser, vert. out. plate charging, .033 ufd, 400V, moulded | |
| C26 | Condenser, sound discriminator cathode by-pass, .0015 ufd | 30-1262-9 |
| C27 | Condenser, S.I.F. cathode by-pass, .0047 ufd, GMV, disk | 30-1262-2 |
| C28 | Condenser, sound discriminator screen by-pass, 200V, .1 ufd, moulded | 30-4650-47 |
| C29 | Condenser, S.I.F. screen by-pass, .0022 ufd, disk | |
| C30 | Condenser, sound discriminator screen by-pass, .001 ufd, GMV, disk | 30-1262-13 |
| C31 | Condenser, hor. hold by-pass, .01 ufd, 200V, moulded | 30-4650-41 |
| C32 | Condenser, hor. osc. grid, .0039 ufd, disk | 30-1262-44 |
| C33 | Condenser, video output coupling, .047 ufd, 400V, moulded | 30-4650-45 |
| C34 | Condenser, noise inverter grid, .0022 ufd, disk | 30-1262-7 |
| C35 | Condenser, hor. osc. plate, 47 uuf, silver mica | 30-1264-3 |
| C36 | Condenser, hor. osc. coupling, 390 uuf, silver mica | 30-1264-1 |
| C37 | Condenser, hor. ringing coil, .0039 ufd, 600V, 10%, moulded | 30-4651-33 |
| C38 | Condenser, video cathode by-pass, .0047 ufd, 200V, 10%, moulded | 30-4651-6 |
| C39 | Condenser, video coupling, .018 ufd, GMV, disk | 30-1262-26 |
| C40 | Condenser, IF AGC by-pass, .22 ufd, 100V, paper | 30-4695-32 |
| C41 | Condenser, line by-pass, .047 ufd, 600V, moulded | 30-4650-62 |
| [illegible]3 | Condenser, IF B+ by-pass, .001 ufd, GMV, disk | 30-1262-13 |
| [illegible]4 | Condenser, yoke, 10L41 & 10L42, 135 mmf, 5 KV, 5% | 30-1246-17 |
| C44 | Condenser, yoke, 10L43, 120 mmf, 5 KV, 10% | 30-1246-26 |
| C.R.T.S. | C.R.T. socket and cable assy., 10L41 | 41-4264-20 |
| | C.R.T. socket and cable assy., 10L42 | 41-4264-17 |
| | C.R.T. socket and cable assy., 10L43 | 41-4264-21 |
| D1 | Dual selenium diodes, horizontal phase comparer | 34-8037 |
| DS1 | Socket, phase comparer diode | 27-6322-1 |
| E1 | Electrolytic condenser, 3 section filter, 10/450, 20/350, 100/50 | 30-2590-56 |
| E2 | Electrolytic condenser, 4 section filter 10L41-80/350, 20/350, 20/350, 40/350 | 30-2590-48 |
| | 10L42 & 10L43-80/350, 20/350, 20/350, 200/150 | 30-2590-52 |
| E3 | Electrolytic condenser, input filter, 200/150, 10L42 & 10L43 only | 30-2568-78 |
| F1 | Fuse, .7 amp., 10L41 only | 27-6318-1 |
| F2 | Fusible resistor, 5.6 ohm, 10L42 & 10L43 only | 33-1366-3 |
| F.C. | Filter choke, 1 henry 12-0189-8 opt | 32-8710-8 |
| H.O.T. | Horizontal output transformer 12-0186-1 | 32-8899-1 |
| J1 | Tuner power socket | 27-6273-56 |
| J2 | I.F. link connector | 41-3754-84 |
| J3 | Socket, C.R.T., 10L43 only | 27-6273-51 |
| J4 | Plug, C.R.T., 10L43 only | 54-4878 |
| J5 | Socket and cable assy., remote power, 10L42 only | 41-4269-7 |
| J6 | Socket, stepper motor power, 10L42 only | 27-6273-28 |
| J7 | Plug, remote power, 10L42 only | 27-6302-6 |
| J8 | Plug, stepper motor, 10L42 only | 27-6302-2 |
| L.C. | Interlock, A.C. line | 27-6240-13 |
| N1 | Resistor-condenser network, 2nd V.I.F. cathode | 30-6033-2 |
| N2 | Resistor-condenser network, vert. feedback | 30-6509-1 |
| N3 | Resistor-condenser network, vert. integration | 30-6030-7 |
| N4 | Resistor-condenser network, sound discriminator grid | 30-6031-1 |
| N5 | Resistor-condenser network, hor. phase comparer | 30-6035-2 |
| N6 | Resistor-condenser network, sync sep. | 30-6532-3 |
| N7 | Resistor-condenser network, hor. osc. | 30-6531-2 |
| P.T. | Power transformer, 10L41 | 32-8897-1 |
| | Power transformer, 10L42 and 10L43 | 32-8902-1 |
| R1 | Resistor, 3rd IF B+ de-coupling, 330 ohms | |
| R2 | Resistor, 3rd IF B+ filter, 330 ohms | |
| R3 | Resistor, 1st IF cathode, 47 ohms | |
| R4 | Resistor, 2nd IF plate damping, 15,000 ohms | |
| R5 | Resistor, 1st IF plate damping, 27,000 ohms | |
| R6 | Resistor, 3rd IF cathode, 120 ohms | |
| R7 | Resistor, 2nd IF B+ de-coupling, 1000 ohms | |
| R8 | Resistor, 1st IF B+ de-coupling, 1000 ohms | |
| R9 | Resistor, 1st IF grid damping, 22,000 ohms | |
| R10 | Resistor, voltage divider, 22,000 ohms | |
| R11 | Resistor, 2nd IF grid divider, 180,000 ohms | |
| R12 | Resistor, IF B+ voltage divider, 220,000 ohms | |
| R13 | Resistor, IF AGC de-coupling, 1000 ohms | |
| R14 | Resistor, vert. osc. cathode, 33,000 ohms | |
| R15A | Resistor, hor. out. screen dropping, 5600 ohms, 3 watts | 33-1363-39 |
| R16 | Resistor, audio output cathode, 270 ohms, 1 watt | |
| R17 | Resistor, vert. output plate charging, 100,000 ohms, 1 watt | |
| R18 | Resistor, vert. osc. plate load, 1.5 megohms | |
| R19 | Resistor, audio B+ de-coupling, 680 ohms, 2 watts | |
| R20 | Resistor, brightness limiting, 333,000 ohms | |
| R21 | Resistor, vert. output grid, 100 ohms | |
| R22 | Resistor, boost filter, 100,000 ohms, 1 watt | |
| R23 | Resistor, vert. output grid, 1.5 megohms | |
| R24 | Resistor, sound discriminator cathode, 270 ohms, 5% | |
| R25 | Resistor, sound discriminator plate load, 180,000 ohms | |
| R26 | Resistor, noise inverter cathode, 4300 ohms, 5% | |
| R27 | Resistor, sound discriminator bias, 15,000 ohms | |
| R28 | Resistor, sound discriminator plate, 1500 ohms | |
| R29 | Resistor, boost filter, 180,000 ohms, 1 watt | |
| R30 | Resistor, noise inverter cathode bias, 6800 ohms, 5% | |
| R31 | Resistor, S.I.F. cathode, 470 ohms | |
| R32 | Resistor, C.R.T. screen dropping, 100,000 ohms | |
| R33 | Resistor, brightness limiting, 150,000 ohms | |
| R34 | Resistor, video damping, 10,000 ohms | |

| Reference Symbol | Description | Service Part No. |
|---|---|---|
| R35 | Resistor, AGC, 12 megohms | |
| R36 | Resistor, range switch, AGC delay, 12 megohms | |
| R37 | Resistor, IF AGC filter, 1.8 megohms | |
| R38 | Resistor, noise inverter bias dropping, 22,000 ohms, 1 watt, 5% | |
| R39 | Resistor, S.I.F. B+ dropping, 22,000 ohms, 1 watt | 66-3224340 |
| R40 | Resistor, sound discriminator de-coupling, 6800 ohms, 2 watts | |
| R41 | Resistor, tuner AGC, 2.2 megohms | |
| R42 | Resistor, noise inverter plate load, 18,000 ohms | |
| R44 | Resistor, hor. osc. plate, 10,000 ohms, 1 watt | |
| R45 | Resistor, video plate, 1800 ohms, 2 watts | |
| R46 | Resistor, hor. buffer grid, 56,000 ohms | |
| R47 | Resistor, hor. osc. cathode, 1000 ohms | |
| R48 | Resistor, sync sep. plate load, 47,000 ohms | |
| R49 | Resistor, hor. output grid bias, 1.8 megohms | |
| R50 | Resistor, sweep output bias divider, 560,000 ohms | |
| R51 | Resistor, contrast control series, 470,000 ohms | |
| R52 | Resistor, tuner AGC, 3.3 megohms | |
| R53 | Resistor, video grid return, 1 megohm | |
| R54 | Resistor, B+ de-coupling, 390 ohms, 1 watt | |
| R55 | Resistor, sweep output bias divider, 470,000 ohms | |
| R56 | Resistor, AGC, 3.9 megohms | |
| R57 | Resistor, video detector load return, 3300 ohms | |
| R58 | Resistor, video cathode, 56 ohms | |
| R59 | Resistor, line to chassis, 470,000 ohms | |
| R60 | Resistor, hor. yoke damping, 1000 ohms | |
| R61 | Resistor, vert. yoke damping, 680 ohms | |
| R62 | Resistor, anode lead, 4700 ohms | |
| R63 | Resistor, vert. yoke damping, 680 ohms | |
| R64 | Resistor, thermistor, vert. yoke | 33-1343-19 |
| R.C.S. | Socket, remote unit, connects to RC-50, 10L43 only | 27-6274-24 |
| REC 1 | Rectifier, silicon, 500 ma, 10L42 & 10L43 only | 34-8048-1 |
| REC 2 | Rectifier, silicon, 500 ma, 10L42 & 10L43 only | 34-8048-1 |
| SW1 | Switch, range | 42-2075-1 |
| SW3 | Switch, Manual-Remote, 10L42 only | 42-2117-1 |
| SW4 | Switch, touch tuning, push button, 10L42 only | 76-11140-1 |
| SW5 | Switch, stepper | 42-2108 |
| T1 | Transformer, 3rd V.I.F. | 32-4686-3 |
| T2 | Transformer, 2nd V.I.F. | 32-4686-2 |
| T3 | Transformer, 1st V.I.F., includes C5A | 32-4686-22 |
| T4 | Coil, sound discriminator quadrature | 32-4644-20 |
| T5 | Transformer, sound IF interstage | 32-4745-2 |
| T6 | Transformer, sound take-off & 4.5 MC trap | 32-4688-9 |
| T7 | Coil, hor. osc. ringing | 32-4754-3 |
| VC1 | Variable condenser, 1st grid pole, 1-5 uuf | 31-6535-2 |
| VC2 | Variable condenser, 47.25 MC trap, 0.5-3 uuf | 31-6535-1 |
| VC3 | Variable condenser, 41.25 MC trap, 1-5 uuf | 31-6535-2 |
| VC4 | Variable condenser, 47.25 MC trap, 0.5-3 uuf | 31-6535-1 |
| V.O.T. | Transformer, vertical output | 32-8829-5 |
| VR1 | Control, dual, height (3 meg.), hor. cent. (100K) | 33-5593-3 |
| VR2 | Control, vertical lin., later production, 1320 ohms plus 180 fixed section | 33-5591-20 |
| VR3 | Control, width, 15,000 ohms | 33-5574-7 |
| VR4 | Control, tone, 2 megohms, 10L41 and 10L42 only | 33-5593-27 |
| VR5 | Control, hor. hold, 50,000 ohms | 33-5593-30 |
| VR6 | Control, vertical hold, 75,000 ohms | 33-5593-25 |
| VR7 | Control, brightness, 200,000 ohms | 33-5593-24 |
| VR8 | Control, dual with switch, volume (1 meg.), contrast (1.5 meg.) | 33-5592-49 |
| W1 | Line Cord, AC | 41-4270-12 |
| WR4 | Wirewound resistor, video plate, 4100 ohms, 7 watts | 33-1335-149 |
| WR5 | Wirewound resistor, 140V B+ dropping, 3000 ohms, 7 watts | 33-1363-36 |
| X1 | Coil, IF filament choke | 32-4645-40 |
| X2 | Coil, detector output, channel 8 beat trap | 32-4645-7 |
| X3 | Coil, 47.25 MC trap | 32-4645-32 |
| X4 | Coil, 1st V.I.F. grid coupling | 32-4645-36 |
| X5 | Coil, 1st V.I.F. grid pole | 32-4645-42 |
| X6 | Coil, 41.25 MC trap | 32-4645-34 |
| X7 | Coil, 47.25 MC trap | 32-4645-19 |
| X8 | Coil, detector output, 40 MC choke, 22 uh | 32-4674-1 |
| X9 | Coil, video series peaking, 330 uh | 32-4762-10 |
| X10 | Coil, video plate peaking, 220 uh | 32-4762-8 |
| X11 | Coil, detector load, 220 uh | 32-4762-8 |
| X12 | Coil, damper plate, RFC | 32-4112-62 |
| X13 | Coil, damper cathode, RFC | 32-4112-62 |
| Y.S. | Socket, yoke | 27-6274-13 |
| | Yoke, 10L41 18-1415-16 opt | 76-10508-13 |
| | Yoke, 10L42 | 76-10508-16 |
| | Yoke, 10L43 | 76-10508-14 |

## MISCELLANEOUS CHASSIS PARTS

| | |
|---|---|
| Connector, antenna, on cab. back, 2 or 4 used | L3517FA1 |
| Cover, clamp & centering assy., yoke all 21" and 17DRP4 | 76-11644-1 |
| 17DAP4 | 76-10513-2 |
| Focus magnet, when required | 76-10970 |
| Fuse holder, 10L41 only | 27-6317-6 |
| Housing, high-voltage socket | 27-6310-4 |
| Perma-Circuit Panel, IF | 54-6993 |
| Perma-Circuit Panel, VOS, Run #1 | 54-6994 |
| Perma-Circuit Panel, VOS, Run #2, red dot | 54-6994-2 |
| Socket, octal, 5U4GB, 10L41 only | 27-6321-1 |
| Socket, octal, 1G3GT, 10L41 & 10L42 | 27-6327-1 |
| 10L43 | 27-6327-2 |
| Socket, octal, 6DQ6A, 6DA4, 2 used | 27-6305-10 |
| Socket, 9 pin min., with shield, 6CG7 | 27-6331-2 |
| Socket, 9 pin min., 6DR7, 6AW8A, 6U8 & 6BQ5 | 27-6309-4 |
| Socket, 9 pin min., 6AM8A | 27-6309-2 |
| Socket, 7 pin min., 6CS6 | 27-6309-3 |
| Socket, 7 pin min., 6DE6, 2 used | 27-6309-1 |
| Tube shield, 6DE6, 2 used | 28-11527-3 |
| Tube shield, 6AM8A | 28-11527-4 |
| Tube shield, 6CS6 | 28-11527-5 |
| Tube shield, 6U8 | 28-11527-6 |

## T-100A, D, E OR F TUNER

### Electrical Parts

| | | |
|---|---|---|
| C1 | Condenser, RF grid, 150 mmf | 30-1265 |
| C2 | Condenser, RF neutralization, 3.0 mmf, ±10% | 30-1221-28 |
| C3 | Condenser, antenna coupling, 5 mmf, ±0.25 mmf | 30-1224-78 |
| C4 | Condenser, oscillator grid blocking, 27 mmf, ±10%, N220 | 30-1271-3 |
| C5 | Condenser, oscillator tank, 3.9 mmf, ±10%, ceramic | 30-1221-14 |
| C6 | Condenser, mixer grid coupling, 39 mmf, ±10% | 30-1251-21 |
| C7 | Condenser, antenna coupling, 5 mmf, ±0.25 mmf | 30-1224-78 |
| C8 | Condenser, oscillator injection coupling, 1.0 mmf, ±0.1 mmf | 30-1224-82 |
| C9 | Condenser, low channel osc. injection 2.2 mmf, ceramic | 30-1221-6 |
| C10 | Condenser, dc blocking, .001 mfd, GMV, disk | 30-1238-13 |
| C11 | Condenser, IF tuning, 7.5 mmf, ±0.5 mmf | 30-1251-19 |
| C12 | Condenser, IF output coupling, 680 mmf, ceramic | 62-168001011 |
| C13 | Condenser, IF trap, 39 mmf, ±10%, NPO, disk | 30-1251-21 |
| C17 | Condenser, AGC by-pass, .22 mfd | 30-4695-32 |
| J1 | Connector, IF output | 57-0590-2 |
| J2 | Plug, tuner power | 27-6302-18 |
| L1 | Condenser, feed-thru, oscillator grid, 27 mmf, ±10%, N750, T-100D, T-100E and later run T-100A | 30-1268-4 |
| | Condenser, oscillator grid, 27 mmf, ±10%, N750, ceramic, first run T-100A | 30-1251-29 |
| L2 | Condenser, feed-thru, filament by-pass, 1000 mmf | 30-1268-7 |
| L3 | Condenser, feed-thru, antenna tank, 5 mmf, ±10% | 30-1268-1 |
| L4 | Condenser, feed-thru, interstage coupling, 80 mmf, ±5% | 30-1268-13 |
| L5 | Condenser, feed-thru, AGC by-pass, 1000 mmf | 30-1268-7 |
| L6 | Condenser, feed-thru, mixer screen, 150 mmf | 30-1268-6 |
| L7 | Condenser, feed-thru, B+ by-pass, 1000 mmf | 30-1268-7 |
| PL1 | Pilot lamp, 6-8V | 34-2031-4 |
| R1 | Resistor, oscillator grid return, 10,000 ohms | 66-3108340 |
| R1A | Resistor, fine tuning absorption damping, 10 ohms T-100A only | 66-0108340 |
| R2 | Resistor, mixer grid return, 220,000 ohms | 66-4228340 |
| R3 | Resistor, RF grid bias, 470,000 ohms, 5% | 66-4478240 |
| R4 | Resistor, RF grid return, 470,000 ohms, 5% | 66-4478240 |
| R5 | Resistor, AGC de-coupling, 10,000 ohms | 66-3108340 |
| R6 | Resistor, mixer B+ dropping, 47,000 ohms, 1 watt | 66-3474340 |
| R7 | Resistor, mixer screen dropping, 15,000 ohms | 66-3158340 |
| R8 | Resistor, oscillator B+ dropping, 68,000 ohms 1 watt, T-100D and E | 66-3684340 |
| | Resistor, oscillator B+ dropping, 56,000 ohms, 1 watt, T-100A | 66-3564340 |
| R9 | Resistor, RF B+ de-coupling, 1800 ohms, 1 watt | 66-2184340 |

| Reference Symbol | Description | Service Part No. |
|---|---|---|
| R10 | Resistor, channel 4, 5 & 6 RF damping, 10,000 ohms | 66-3108340 |
| R11 | Resistor, channel 2, & 3 ant. damping, 1500 ohms | 66-2158340 |
| T1 & T2 | Coil, antenna, 2 used, T-100A and E | 32-4725-3 |
| | Coil, antenna, 2 used, T-100D | 32-4725-4 |
| T3 | Coil, IF output | 32-4629-13 |
| T4 | Coil, IF trap | 32-4719-2 |
| VC1 | Condenser, variable, mixer grid, 0.8—3.0 mmf | 31-6520-1 |
| VC2 | Condenser, variable, RF plate, 0.8—3.0 mmf | 31-6520-1 |
| VC3 | Condenser, variable, oscillator fine tuning | See Mech. Parts |
| WS1 | Switch wafer, oscillator | 76-10108 |
| WS2 | Switch wafer, mixer grid | 76-10556 |
| WS3 | Switch wafer, RF plate | 76-11712 |
| WS4 | Switch wafer, antenna, T-100A E and F | 76-10554 |
| | Switch wafer, antenna, T-100D | 76-11498 |
| X1 | Coil, RF plate to cathode | 32-4652-52 |
| X2 | Coil, mixer screen | 32-4652-48 |

## MECHANICAL PARTS

| | |
|---|---|
| T100F Tuner Complete, 10L41P | 76-10524-8 |
| T-100A Tuner Complete, 10L42 | 76-10524-5 |
| T-100D Tuner Complete, 10L43 | 76-10524-3 |
| T-100 Tuner Complete, 10L41 | 76-10524-4 |
| Ball detent | 56-8020 |
| Bevel gear | 54-5556 |
| Clips, antenna lead connector, 2 used | 228-0055 |
| Drive screws, 5 used | 1W19907FA1 |
| "E" washer, tuner switch shaft, rear | 1W60980FA3 |
| Fine Tuning parts | |
| T-100D and E | |
| Capacitor disk | 28-11835 |
| Dielectric cam | 54-6644 |
| Insulator | 54-6375 |
| Spring, stator | 28-11834 |
| T-100A | |
| Hairpin, plunger grounding | 28-12976 |
| Plunger assy. | 76-11705 |
| Spring, plunger return | 28-13086 |
| Stator terminal sleeve | 56-9271 |
| Tube, insulator | 54-4898-2 |
| Washer, spring grip, tube mtg. | W-2556-5 |
| Retaining spring, front of shaft | 57-1468 |
| Shaft assembly, switch, T-100A | 76-11451-11 |
| Shaft assembly, switch, T-100D | 76-11451-9 |
| Shaft assembly, switch, T-100E | 76-11451-10 |
| Shaft, fine tuning, T-100D | 28-12114-13 |
| Shaft, fine tuning, T100F | 28-12114-14 |
| Socket assy., pilot lamp, T-100A and T-100E | 76-2142-6 |
| Socket assy., pilot lamp, T-100D | 76-2142-24 |
| Socket and shield assy., 9 pin tube, 2 used | 27-6323-7 |
| Spring, shaft grounding | 56-8023 |
| Washer, curved spring, front of shaft | 28-12263-56 |
| Washer, flat, front of shaft | 56-9351-3 |
| Washer, flat, rear of shaft | 56-9351 |

## AUTOMATIC TUNER COMPONENTS—10L42

| | |
|---|---|
| Channel Indicator Assembly | |
| Bevel gear | 54-5556 |
| Dial | 54-5549 |
| Dial shaft | 28-12996 |
| "E" washer, 1 shaft retaining, 2 dial retaining | 1W60979FE7 |
| Washer, flat, 1 shaft retaining, 2 dial retaining | 1W52505FA3 |
| Washer, spring, dial retaining | 1W56408FA1 |
| Washer, spring, shaft retaining | 1W56331FA1 |
| Fail Safe Assembly (Manual Channel Selector) | |
| Bevel gear | 54-5556 |
| "E" washer, shaft retaining | 1W60979FE7 |
| Knob, channel selector | 54-6135-3 |
| Shaft | 28-13156 |
| Pre-Set Fine Tuning Assembly | |
| Arm, wrench return | 28-13053 |
| "E" washer, wrench shaft retaining, 2 used | 1W60979FE7 |
| Extension shaft, wrench | 28-13074-1 |
| Knob, fine tuning | 28-13051 |
| Lever, pre-set fine tuning | 28-13054 |
| Plate and screw assy., pre-set fine tuning | 76-11735-1 |
| Spring, arm tension | 28-12772-1 |
| Spring, lever compression | 28-12925 |
| Spring, lever stabilizing | 28-13249 |
| Spring, wrench compression | 28-12904 |
| Washer, flat, wrench shaft, 3 used | 1W52505FA3 |
| Wrench | 28-13056 |
| Stepper and Motor Assembly | |
| "E" washer | 1W60979FE7 |
| Knob, reset shaft | 54-6440-1 |
| Motor | 41-2076-1 |
| Reset lever assy. | 76-11709 |
| Reset rod | 28-13096 |
| Spring, reset lever | 28-13031 |
| Spring, pin, 13 used | 28-11483-1 |
| Stepper wheel | 54-9890-1 |
| Switch, stepper | 42-2108 |
| Washer, flat, wheel mounting, 2 used | 1W52507FA3 |
| Washer, shoulder, reset lever | 28-12973 |
| Washer, spring, wheel | 1W56408FA1 |

## AUTOMATIC TUNER COMPONENTS—10L42

| | |
|---|---|
| Channel Indicator Assembly | |
| Bevel gear | 54-5556 |
| Dial | 54-5549 |
| Dial shaft | 28-12996 |
| "E" washer, 1 shaft retaining, 2 dial retaining | 1W60979FE7 |
| Washer, flat, 1 shaft retaining, 2 dial retaining | 1W52505FA3 |
| Washer, spring, dial retaining | 1W56408FA1 |
| Washer, spring, shaft retaining | 1W56331FA1 |
| Fail Safe Assembly (Manual Channel Selector) | |
| Bevel gear | 54-5556 |
| "E" washer, shaft retaining | 1W60979FE7 |
| Knob, channel selector | 54-6135-3 |
| Shaft | 28-13156 |
| Pre-Set Fine Tuning Assembly | |
| Arm, wrench return | 28-13053 |
| "E" washer, wrench shaft retaining, 2 used | 1W60979FE7 |
| Extension shaft, wrench | 28-13074-1 |
| Knob, fine tuning | 28-13051 |
| Lever, pre-set fine tuning | 28-13054 |
| Plate and screw assy., pre-set fine tuning | 76-11735-1 |
| Spring, arm tension | 28-12772-1 |
| Spring, lever compression | 28-12925 |
| Spring, lever stabilizing | 28-13249 |
| Spring, wrench compression | 28-12904 |
| Washer, flat, wrench shaft, 3 used | 1W52505FA3 |
| Wrench | 28-13056 |
| Stepper and Motor Assembly | |
| "E" washer | 1W60979FE7 |
| Knob, reset shaft | 54-6440-1 |
| Motor | 41-2076-1 |
| Reset lever assy. | 76-11709 |
| Reset rod | 28-13096 |
| Spring, reset lever | 28-13031 |
| Spring, pin, 13 used | 28-11483-1 |
| Stepper wheel | 54-9890-1 |
| Switch, stepper | 42-2108 |
| Washer, flat, wheel mounting, 2 used | 1W52507FA3 |
| Washer, shoulder, reset lever | 28-12973 |
| Washer, spring, wheel | 1W56408FA1 |

## CRT HOUSING ASSY. (10L43 chassis)

| | |
|---|---|
| Collar, base, used with brass side arm assy., 17" & 21" | 28-12820-3 |
| Collar, base, without holes for side arm assy., 17" | 28-12820-4 |
| Cover, rear of CRT access plate | 54-6832-1 |
| Decorative band, window to shell, 17" | 54-6997 |
| Decorative band, window to shell, 21" | 54-6820 |
| Plug button, brass finish, 2 used | 1W17727FA21 |
| Screw, frame to shell, 2 used | W2537FA1 |
| Shell, CRT housing, 17" | 54-6984-1 |
| Shell, CRT housing, 21" | 54-6690 |
| Side arm assy., brass, 17" set where used, 2 used | 76-11658-1 |
| Side arm assy., brass, 21", 2 used | 76-10629 |
| Spindle, swivel | 28-12821-1 |
| Spring, decorative band mtg. | 28-12840 |
| Strap assy., window to shell mtg., 17" | 76-11643 |
| Strap assy., window to shell mtg., 21" | 76-10671 |
| Trim | 28-12568 |
| Washer, strap mtg. bolt, 2 used | 1W52407FA3 |
| Window, front, 17" | 54-6985-2 |
| Window, front, 21" | 54-6691 |