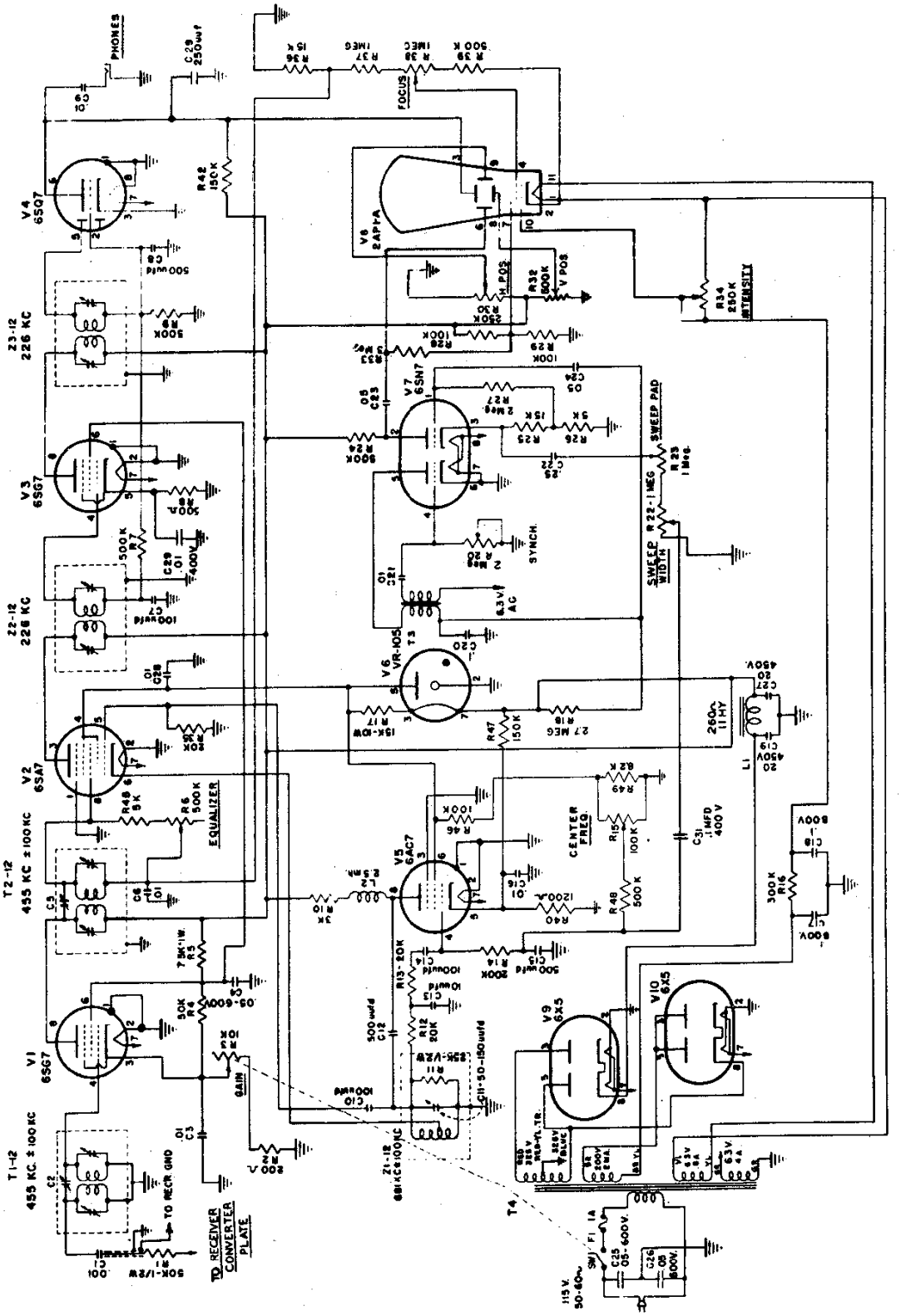
THE HALLICRAFTERS CO.

MODEL SP-44
SKYRIDER, PANORAMIC



TROUBLE SHOOTING CHART.

Symptom	Causes and Cures
No illumination of the cathode ray tube, V8.	1. AC power is off. a. See if tubes are lit. b. Fuse inside chassis burned out. c. Check ON-OFF switch. 2. INTENSITY and FOCUS controls out of adjustment. 3. Defective cathode ray tube, or rectifiers V9, V10. 4. Defective high voltage power supply. 5. Tubes not seated properly in sockets. 6. Shorted filter condensers C17, C18. 7. Open resistors R16, R34.
2. Baseline trace cannot be made sharp and bright.	1. AC power input below 115V. 2. Check high voltage power supply (V10). 3. Defective cathode ray tube. 4. Check condition of INTENSITY and FOCUS controls for possible opens. 5. Check resistance of R16, R36, R37 and R39.
3. Baseline trace cannot be made to coincide with screen baseline.	1. Check high voltage power supply (V10). 2. Check V4 if unable to get vertical position. 3. Check R31. 4. Check the voltage on the cathode ray tube deflection plates against the voltages specified on the Voltage Chart.
4. Stationary spot on the screen.	1. Check V7. 2. Trace the sawtooth voltage with an oscilloscope from the blocking oscillator V7 to V8. 3. Check R18, R20.
5. Jumpy baseline or flickering images.	1. Sawtooth Generator is not synchronized to half the line frequency. Change V7. Check the values of the resistors and condensers R18, R19, R20, R21, C20, C21. 2. Feed the AC voltage from pin No. 7, of "V4" through a 500 mmf condenser to pin No. 2 of the same tube. Adjust syncronization potentiometer under the chassis until two stationary peaks appear on the screen, when the adjustment is completed, remove the AC voltage from pin No. 2.
6. No signals.	1. Check connection to receiver. 2. Turn up GAIN control. 3. Check operation of the receiver. 4. Test PANADAPTOR for center deflection with a signal generator set at 455KC (or I.F. of receiver) to the input (disconnected from receiver). 5. Increase SWEEPWIDTH control to maximum sweep.
7. Whole baseline moves vertically when receiver is tuned.	1. F.M. sweep is not operating, and set behaves as though the SWEEPWIDTH control is set at zero. Check V5. Use an oscilloscope to check sawtooth at pin #4 of V5. 2. Strong local stations coming through the receiver and beating against one another in the input stages of the PANADAPTOR to produce 226KC. Remedy would be to align receiver or install wave traps.
8. Baseline remains at top of the screen regardless of tuning.	1. I.F. amplifier may be oscillating Change V3, V6. Check C4, C28. Compare V3 voltage against voltage chart. 2. Video amplifier V4 may be inoperative. Change V4. Compare V4 voltages against Voltage Chart.
9. Low gain. Able to hear weak signals but cannot see them on PANADAPTOR screen.	1. Check all tubes. Most likely to be weak V3, V4. 2. Check voltages, especially screen voltage of V3. 3. Misaligned I.F. transformers. *Note*: Do not attempt alignment until *absolutely* certain that alignment is at fault.
10. Symptoms of misalignment. a. Low gain. b. "Pips" too wide. c. The double peaked response of the band pass amplifier is not peaked at points 10KC from each end of the scale. d. Frequency range of signals on the screen is other than 200KC at maximum sweepwidth. e. Range of the CENTER FREQ. control is less than 200KC. f. Pip generated by an unmodulated signal is non-symmetrical.	1. Do not attempt alignment until the set has been thoroughly checked for faults. Be sure that the error limits, as given in the specifications, for the PANADAPTOR, are exceeded before concluding that alignment is necessary.

VOLTAGE CHART.

Voltmeter 1,000 ohms per volt.
Line voltage 115V

Circuit Symbol	Type	Function	PIN NUMBER 1	2	3	4	5	6	7	8	9	10	11
V1	6SG7	R. F. Amplifier	0	0	17	0	17	115	6.3AC	380			
V2	6SA7	Converter	0	0	380	105	0	0	6.3AC	−1.3			
V3	6SG7	I. F. Amplifier	0	0	2.4	0	2.4	115	6.3AC	380			
V4	6SQ7	Det. Video Amp	0	0	0	0	0	125	6.3AC	0			
V5	6AC7	Reactor	0	0	0	0	3.3	105	6.3AC	360			
V6	VR105	Voltage Reg			380		105		380				
V7	6SN7	Sawtooth Gen. and Amplifier	0	60	5	−0.2	3	0	6.3AC	0			
V8	2AP1-A	CRT Indicator	−420	−420	140	−100	0	SL	160	175	155	−490	−420
V9	6 x 5	L. V. Rectifier			325AC		325AC		6.3AC	390			
V10	6 x 5	H. V. Rectifier			−700		−700		6.3AC	325AC			

Notes:—GAIN at minimum, SWEEPWIDTH at maximum, all other controls at normal position. SL indicates slight movement.

VOLTAGE CHART.

Voltmeter 25,000 ohms per volt.
Line voltage 115V.

Circuit Symbol	Type	Function	PIN NUMBER 1	2	3	4	5	6	7	8	9	10	11
V1	6SG7	R. F. Amplifier	0	0	20	0	20	120	6.3AC	380			
V2	6SA7	Converter	0	0	380	105	0	0	6.3AC	−3.0			
V3	6SG7	I. F. Amplifier	0	0	2.7	0	2.7	120	6.3AC	380			
V4	6SQ7	Det. Video Amp	0	0	0	0	0	150	6.3AC	0			
V5	6AC7	Reactor	0	0	0	0	3.4	105	6.3AC	360			
V6	VR105	Voltage Reg			380		105		380				
V7	6SN7	Sawtooth Gen. and Amplifier	0	150	8.2	−7.3	50	0	6.3AC	0			
V8	2AP1-A	CRT Indicator	−600	−600	165	−380	0	115*	185	250	185	−650	−600
V9	6 x 5	L. V. Rectifier			325AC		325AC		6.3AC	390			
V10	6 x 5	H. V. Rectifier			−740		−740		6.3AC	325AC			

Notes:—GAIN at minimum, SWEEPWIDTH at maximum, all other controls at normal position. *Voltage reading varies according to scale used.

RESISTANCE CHART.

Circuit Symbol	Type	Function	PIN NUMBER 1	2	3	4	5	6	7	8	9	10	11
V1	6SG7	R. F. Amplifier	0	0	200	20	200	40K	0	50K			
V2	6SA7	Converter	0	0	50K	70K	20K	5	0	15K			
V3	6SG7	I. F. Amplifier	0	0	500	1 Meg.	500	40K	0	50K			
V4	6SQ7	Det. Video Amp	0	500K	0		500K	250K	0	0			
V5	6AC7	Reactor	0	0	0	300K	1K	70K	0	53K			
V6	VR105	Voltage Reg		0	50K		70K		50K				
V7	6SN7	Sawtooth Gen. and Amplifier	2 Meg.	550K	20K	1.3Meg.	3.5Meg.	0	0	0			
V8	2AP1-A	CRT Indicator	2.5Meg.	2.5Meg.	250K	1.5Meg.		3 Meg.	75K	150K	75K	2.5Meg.	2.5Meg.
V9	6 x 5	L. V. Rectifier		0	270	2.5Meg.	250		0	50K			
V10	6 x 5	H. V. Rectifier		0	3 Meg.	3 Meg.	3 Meg.		0	250			

Notes:—GAIN and SWEEPWIDTH at maximum, all other controls at normal position. K=1,000 ohms, Meg.=megohms, all other resistances are in ohms.

DeWald 418

This model is the same as model 414 appearing on *page 11-2 of Rider's Volume XI.*

Electronic Laboratories 2811

This model, shown on *page 16-8 of Rider's Volume XVI,* uses the Webster model 56 record changer, which is shown on *page RCD.CH.15-10 of Rider's Volume XV.*

Emerson BF-169, BF-204, And BF-207

These models are the same as Model BF-191 appearing on *pages* 9-1 *and* 9-2 *of Rider's Volume IX.*

Emerson 567, Chassis 120016

This model is the same as Model 560, Chassis 120016, appearing on *pages 17-30 to 17-32 of Rider's Volume XVII.*

FM Specialties Model Fidelotuner

This model is shown on *pages 17-1 to 17-4 of Rider's Volume XVII.* Three terminals are shown in Fig. 5, page 17-4; the first labelled 3, and the third terminal (not labelled in this figure) should be labelled 4. The ground from the phonograph connection to the receiver should be made to this third terminal (terminal 4).

Farnsworth AC-55, Chassis C2-3

This model is the same as model ACL-55, Chassis C 2-3, shown on *pages 11-7 and 11-10 in Rider's Volume XI.*

Farnsworth ACL 55, ACL56, AKL58, AKL 59

These models shown on *pages 11-7 and 11-10 of Rider's Volume XI* are erroneously listed as ATL.

Farnsworth GK-140

Slippage of the dial-drive cable on the early production sets can be corrected by replacing the cable with part number 05096. This cord is softer and smaller than the one used previously.

If the push buttons bind on the front panel of the cabinet, the ganged capacitor may not be properly positioned. This may be corrected by installing a flat metal washer under each of the mounting grommets. This may be done without removing the gang from the chassis.

Oscillation or low sensitivity on f.m. may be due to poor ground connections from the gang to the r-f shelf. When aligning the f-m band, oscillation may occur with certain signal generators. Changing the value of the resistor in series between the generator and the chassis will prevent oscillation. With some generators more than 400 ohms are required, with others less.

In some preliminary sets a 200-$\mu\mu$f capacitor was placed in series with the short-wave converter-trimmer. If for any reason this trimmer requires replacement, removal of the capacitor is suggested. This capacitor is not shown on the schematic.

In some of the preliminary 14-tube sets, Belden braid was used to ground the ganged capacitor to the r-f shelf. In certain instances too much solder flowed into the braid and as a result some joints break loose or the set becomes microphonic. This braid should be replaced with soft copper strips.

General Electric A51, A56

These models are the same as model A54 shown on *pages 7-4 to 7-6 of Rider's Volume VII.*

General Electric H639AC-DC

The r-f alignment instructions of these models found on *page 11-80 of Rider's Volume XI,* should read as follows: With gang condenser plates completely meshed, set dial to the first mark at the left end of scale. Then set dial to 1500 kc. Apply a 1500-kc signal either through a standard I.R.E. dummy to the antenna terminal or through an additional loop connected to the generator output which can be magnetically coupled to the receiver Beam-a-Scope. Align C2 and C1 at 1500 kc for maximum output. Set dial to 580 kc and peak C3 on 580 kc while rocking the gang condenser. Retrim at 1500 kc.

GE YRB 60-12

This receiver is the same electrically as the YRB 60-2 appearing on *page 15-5 of Rider's Volume XV* but the cabinet is different.

GE YRB 92-2 and 81-3

These models are the same electrically as the YRB 82-1 appearing on *pages 15-53 to 15-54 of Rider's Volume XV,* but they have different cabinets.

General Electric L604

This model is the same as Model L600 appearing on *page 13-40 of Rider's Volume XIII.*

General Electric 202

This receiver is the same electrically as the model 200 as shown on *pages 15-54 to 15-56 in Rider's Volume XV,* except that it has a different cabinet.

General Electric 219, 220, 221

A few cases of hum which cannot be reduced in the normal manner from these models shown on *pages 15-28 to 15-31 of Rider's Volume XV,* may be corrected by cathode degeneration in the output tube, 35L6GT/G, cathode circuit. Remove R17 and C29-C from the circuit. This can be done by disconnecting one end of R17.

General Electric 260

This model appears on *pages 16-7 to 16-12 of Rider's Volume XVI.* It has been found that late production 1LC6 tubes, coded H7E, will oscillate at another frequency in addition to the desired frequency, causing unsatisfactory operation. To remedy this condition, the oscillator grid capacitor, C17, should be changed from 100$\mu\mu$f to 56$\mu\mu$f.

GE 254

This model is illustrated on *pages 16-3 to 16-5 of Rider's Volume XVI.* The suffix letters after 254 indicate only the cabinet styling. All versions are electrically identical.

Firestone 7402-4

This model is the same as model S7426-6 shown on *page 10-5 of Rider's Volume X.*

Firestone 7423-5

This model is the same as model S7402-5 shown on *page 13-38 of Rider's Volume XIII.*

Goodrich R655W

This model uses the Admiral record-changer model RC161 or RC161A, which are to be found on Admiral RCD. CH. pages 17-1 to 17-7 of Volume XVII.

Hallicrafters S-40A

This model is the same as Model S-40, second revision, on *pages 15-67 to 15-86 of Rider's Volume XV,* except for the following changes. C18 has been changed in value from 100$\mu\mu$f to 68$\mu\mu$f. A 10-ohm resistor (R30) has been connected between the center tap of oscillator coil T10 and terminal C. R30 has been removed from its previous position between C16 and the junction of C26, C6C, C7C, and switch S1F. C55 has been changed in value from 100$\mu\mu$f to 47$\mu\mu$f, and is now connected to the top of the 470-$\mu\mu$f capacitor (C54). The coil T17 is connected directly across C54, with one end going to ground. The center tap of this coil is connected to the cathode of the 6J8 tube. The 0.01-μf capacitor (C53) is connected from the plate of the 6J8 tube directly to ground.

The parts list should be changed to read as follows:

Ref. No.	*Description*	*Hallicrafter's Part No.*
C18	68$\mu\mu$f, ±10%, 500 vdcw; neg. temp. coeff. 0.0075$\mu\mu$f/$\mu\mu$f/deg.C; ceramic	CC25UK680K
C55	47$\mu\mu$f, ±20%, 500VDC, Mica	CM20A470M
T17	BFO coil; 455 kc; shielded	54B033-2

Hallicrafters SP-44 AND SX-42

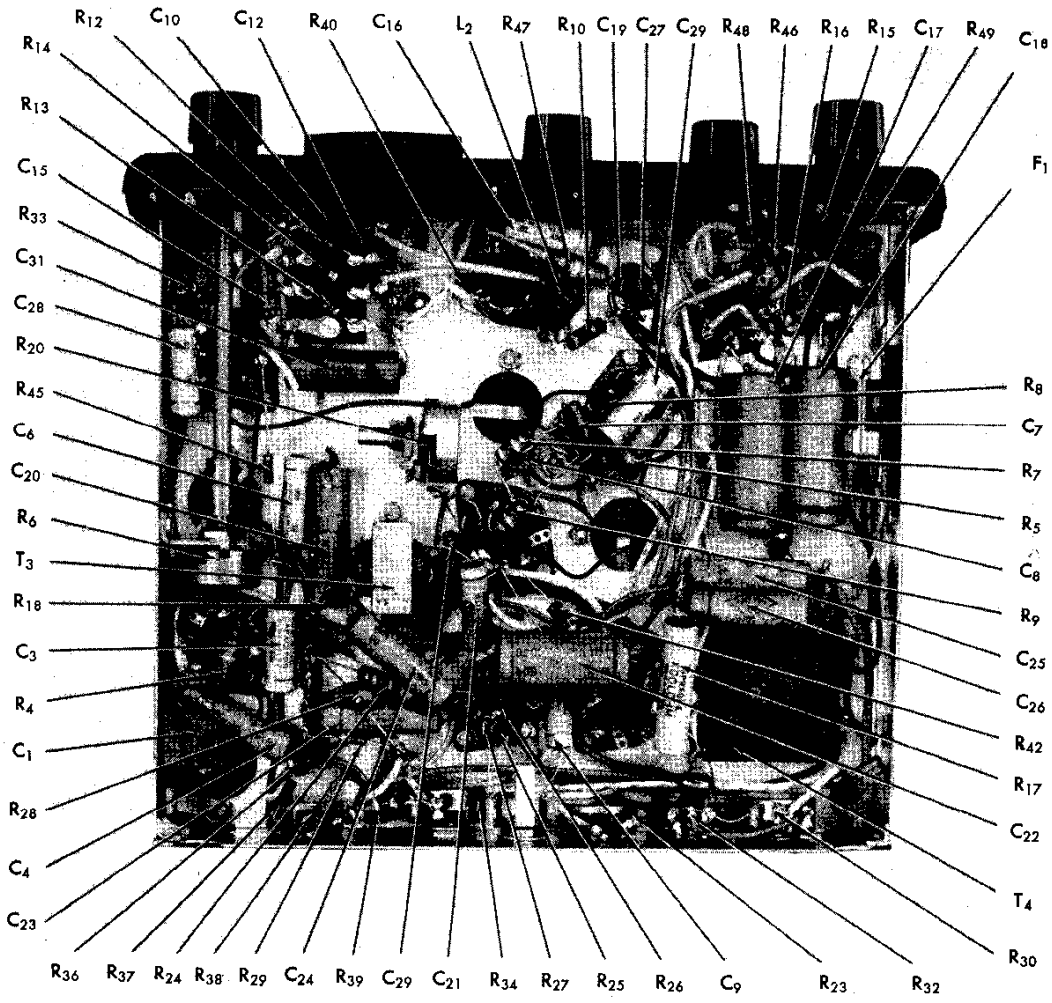
These models appear on *pages* 17-1 *to* 17-5 *and* 17-6 *to* 17-16 *respectively of Rider's Volume XVII.* When the SX-42 is used with the SP-44 Panadaptor on the low-frequency band, it appears to motor boat. To correct this condition, do the following.

The connecting cable between the SP-44 and the SX-42 is shielded and the shield is connected to the SX-42 ground. Disconnect the shield from the SX-42 ground and place a 50-$\mu\mu$f capacitor between the shield and the SX-42 chassis. Be sure that the SX-42 chassis is well grounded. A shielded antenna lead, or a balanced antenna, on the SX-42 may also help.

The following modifications should be made on the SP-44 unit. A strip of bonding braid, 3/8 inch wide, may

THE HALLICRAFTERS CO.

MODEL SP-44
Skyrider Panoramic



Bottom view of chassis showing components location

REAR PANEL CONNECTIONS: Consists of a line cord with plug, phone jack for monitoring purposes, and R-F coupling cable to companion receiver.

POWER SUPPLY DATA: 105-125 volts AC, 50-60 cycles, power drain is approximately 55 watts.

TUBE TYPES AND FUNCTIONS: 6SG7 R-F amplifier, 6SA7 converter, 6SG7 I-F amplifier, 6SQ7 detector-video amplifier, 6AC7 reactor, VR-105 voltage regulator, 6SN7 saw tooth generator and amplifier, 2AP1 cathode ray tube, 6X5 low voltage rectifier, 6X5 high voltage rectifier.

Skyrider Panoramic Model SP-44, view showing operating controls.

MODEL SP-44
Skyrider Panoramic

THE HALLICRAFTERS CO.

REPLACEMENT PARTS LIST FOR MODEL SP-44 PANORAMIC ADAPTOR

Ref. No.	Description	Hallicrafters Part No.
	RESISTORS	
R2	200 ohm, ½ W.	RC20AE201J
R8	500 ohm, ½ W.	RC20AE510J
R40	1200 ohm, ½ W.	RC20AE122J
R10	3000 ohm, ½ W.	RC20AE302J
R26, 45	5000 ohm, ½ W.	RC20AE512J
R25, 36	15,000 ohm, ½ W.	RC20AE153M
R49	8200 ohm, ½ W.	RC20AE822J
R12, 13	18,000 ohm, ½ W., 10%	RC20AE183J
R35	20,000 ohm, ½ W.	RC20AE203J
R11	25,000 ohm, ½ W.	RC20AE273K
R1, 4	50,000 ohm, ½ W. 10%	RC20AE513J
R28, 29	100,000 ohm, ½ W.	RC20AE104M
R42	150,000 ohm, ½ W.	RC20AE154K
R14	200,000 ohm, ½ W.	RC20AE204J
R16	300,000 ohm, ½ W.	RC20AE304J
R7, 9, 48, 39 and 24	500,000 ohm, ½ W.	RC20AE514J
R37	1. megohm, ½ W.	RC20AE105M
R27	2. megohm, ½ W.	RC20AE205J
R18	2.7 megohm, ½ W.	RC20AE275J
R33	3. megohm, ½ W.	RC20AE305J
R47	150,000 ohm, 1 W.	RC35CE154J
R46	100,000 ohm, 1 W.	RC35CE104J
R5	75,000 ohm, 1 W.	RC35CE753J
R17	15,000 ohm, 10 W.ww	24BG153E
	POTENTIOMETERS	
R3	10,000 ohms, W./sw	25B678
R15	100,000 ohms	25B679
R22	100,000 ohms, no slot	25B677
R6	500,000 ohms, no slot	25B680
R30, 34	250,000 ohms	25B682
R22	1. meg	25B683
R23, 38	1. meg., slotted	25B684
R20	2. meg., slotted	25B681

Ref. No.	Description	Hallicrafters Part No.
	CAPACITORS, MICA	
C13	10 uuf	CM20A100J
C7, 10, 14	100 uuf	CM20A101M
C29	250 uuf	CM20A241J
C8, 12, 15	500 uuf	CM20A511J
C1	.001 mfd	CM25A102M
	CAPACITORS, PAPER	
C3, 6, 9, 16, 28, 30, 21	.01 400 VDC	46AW103H
C4, 23, 24, 25, 26	.05 400 VDC	46AW503H
C20, 31	.1 400 VDC	46AV104E
C17, 18	.1 800 VDC	46A081
C22	.25 600 VDC	46AV104H
C19, 27	20-20 MFD 450 VDC electrolytic	45A117
	TRANSFORMERS	
L1	Choke, RF	53A120
L2	Choke, power filter	56B087
T3	Sawtooth generator transf.	51B978
T4	Power transformer	52C150
T1, 2	RF transformer	51B979
Z2, 3	IF transformer	50C219
Z1	Oscillator coil	51B980

MISCELLANEOUS

Fuseholder	6A287	RF cable	87A960
Phone jack	36A040	Spring clip connector	76A376
Knob	15A058	Octal socket	6A035
Screen, CRT	22A190	CRT socket	6A288
Fuse, 1 amp.	39A321	Line cord and plug	8781577
Alligator clip	76A375		

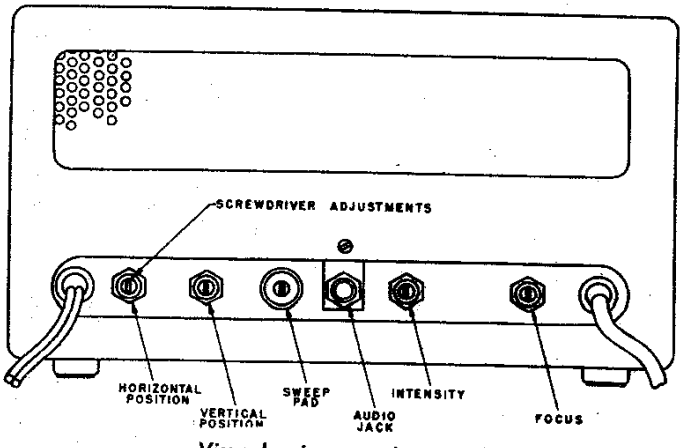
a. ALIGNMENT PROCEDURE. — Allow the PANADAPTOR to reach operating temperature to assure stable operation. This may require 10-20 minutes. Adjust the screwdriver controls, INTENSITY and FOCUS, for optimum brightness and sharpness of the baseline trace. Note: Reduction of the intensity and proper adjustment of the Focus control produces a sharp baseline. Bring the baseline trace in coincidence with the lowest horizontal line on the screen by means of the VERTICAL POSITION Control.

Adjust the HORIZONTAL POSITION Control so that the baseline is approximately centered along the horizontal axis.

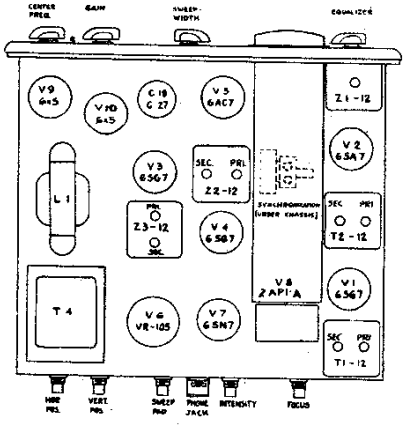
Determine whether the horizontal sweep is synchronized to half the line of frequency by introducing hum into the grid (pin #2) of the 6SQ7 (use finger or screwdriver). A double hump should appear on the baseline if the circuit is operating correctly. If it does not, refer to the Troubleshooting Chart.

The Panoramic screen is used as the alignment indicator. Signals should be kept below the saturation level by limiting the signal generator output voltage.

continued



View showing operating control functions



Top View of Chassis.

THE HALLICRAFTERS CO.

MODEL SP-44
Skyrider Panoramic

Alignment of	Signal Generator Output	Position of Controls	Procedure
I.F. Amplifier	226KC unmodulated to pin #8 of V2.	SWEEPWIDTH at zero position. CENTER FREQ. turned extreme counter-clockwise.	Entire baseline deflects upward. Adjust the trimmers in the I.F. transformers (Z2-12, Z3-12) for maximum deflection.
F.M. Oscillator	455KC (or I.F. of the receiver) unmodulated to pin #8 of V2.	SWEEPWIDTH at maximum. SWEEP PAD set half way. CENTER FREQ. at center or zero position.	A "pip" will appear on the screen. Adjust the trimmer in the oscillator transformer Z1-12, to bring "pip" to the center of the screen. Turn the SWEEPWIDTH control to almost zero for more accurate indications of proper trimmer adjustment. Return the SWEEPWIDTH control to maximum and adjust the HORIZONTAL POSITION control so that the "pip" is directly over the zero mark on the screen.
Linearity of Sweep	355KC - 555KC (or I.F. of the receiver ±100KC) unmodulated to pin #8 of V2.	SWEEPWIDTH at maximum. CENTER FREQ. at center or zero position.	Set the signal generator for 555KC *(or receiver I.F. +100KC)* and bring the "pip" to the —100KC mark by means of the SWEEP PAD. Shift the signal generator frequency to 355KC *(or receiver I.F. —100KC)*. The "pip" should be at the +100KC mark. If the linearity is incorrect, the deflections appear more than 10KC or ½ division from each end with 455KC *or I.F. deflection* in the center of the screen. Some correction is possible by trial and error adjustment of the oscillator trimmer (Z1-12) and the CENTER FREQ. control. If after the adjustment is made the CENTER FREQ. control knob is off center for a 455KC *(or receiver I.F.)* deflection at the zero mark on the screen, unscrew and reset the knob to the center position.
R.F. Bandpass Amplifier	365KC - 545KC (or I.F. of receiver) ±90KC) unmodulated to a 50K resistor in series with the *full length* of input cable to the PANADAPTOR.	Set GAIN to maximum. Turn EQUALIZER fully clockwise. Set CENTER FREQ. control to zero.	Set the signal generator at 545KC *(or receiver I.F. +90)*. Back off the side side trimmers on both R.F. transformers (T1-12, T2-12) and align the top trimmers for maximum deflection. Shift signal generator to 365KC *(or receiver I.F. —90)* and tune the two side trimmers for maximum deflection. Repeat both adjustments. The ratio of the peak to center heights (peak to valley) should be greater than 20:1.