

Hallicrafters, Inc.

Model: SX-32

Chassis:

Year: Pre March 1942

Power:

Circuit:

IF:

Tubes:

Bands:

Resources

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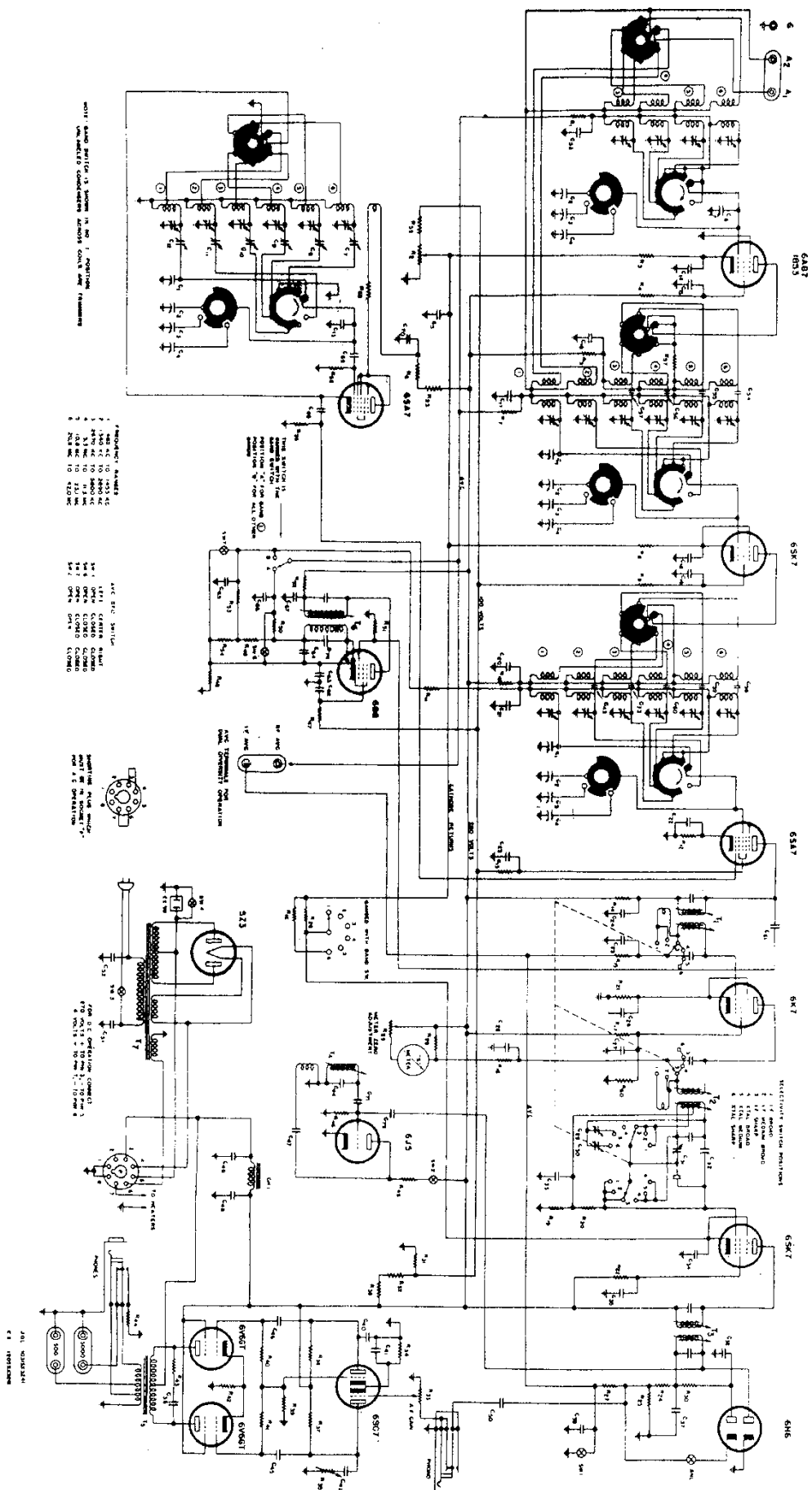
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NOTE: SHOWN WITH 13 TUBES IN NO. 1 POSITION.
 UNCHECKED COMPONENTS APPEAR ONLY IN THIS POSITION.

RESISTOR VALUES:
 1. 100K TO 100M
 2. 100K TO 100M
 3. 100K TO 100M
 4. 100K TO 100M

ALL SW. SWITCHES
 1. 100K TO 100M
 2. 100K TO 100M
 3. 100K TO 100M
 4. 100K TO 100M

RECEIVER SWITCH POSITION:
 1. 100K TO 100M
 2. 100K TO 100M
 3. 100K TO 100M
 4. 100K TO 100M

THE HALLICRAFTERS INC.
MODEL SX-32 SKYRIDER CONDENSERS

MODEL SX-32, Sky Rider

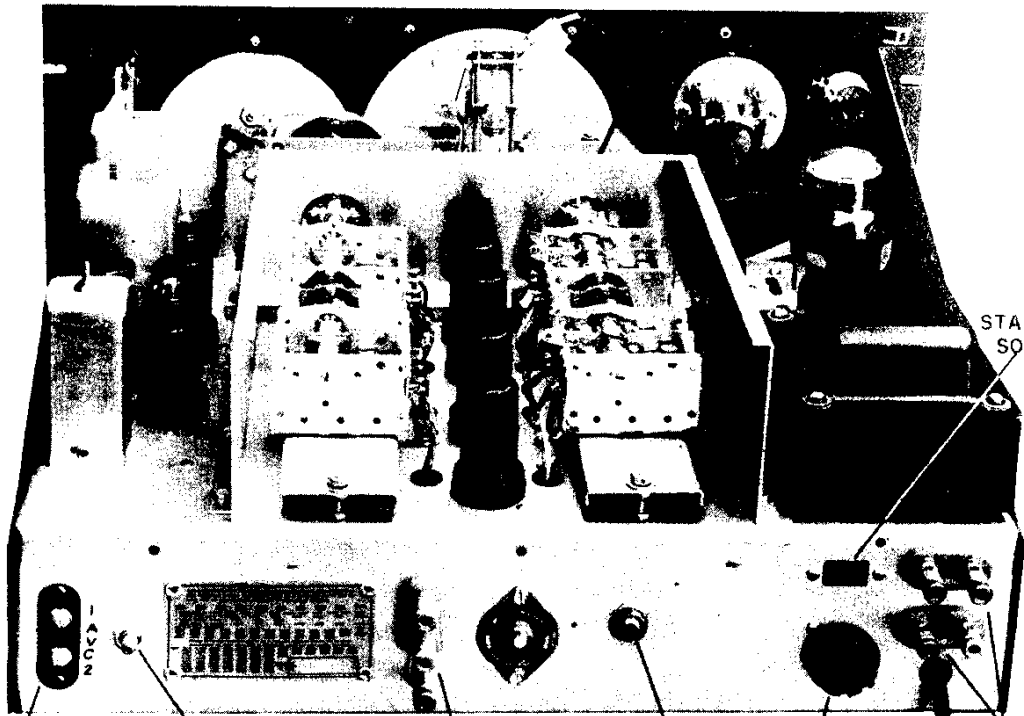
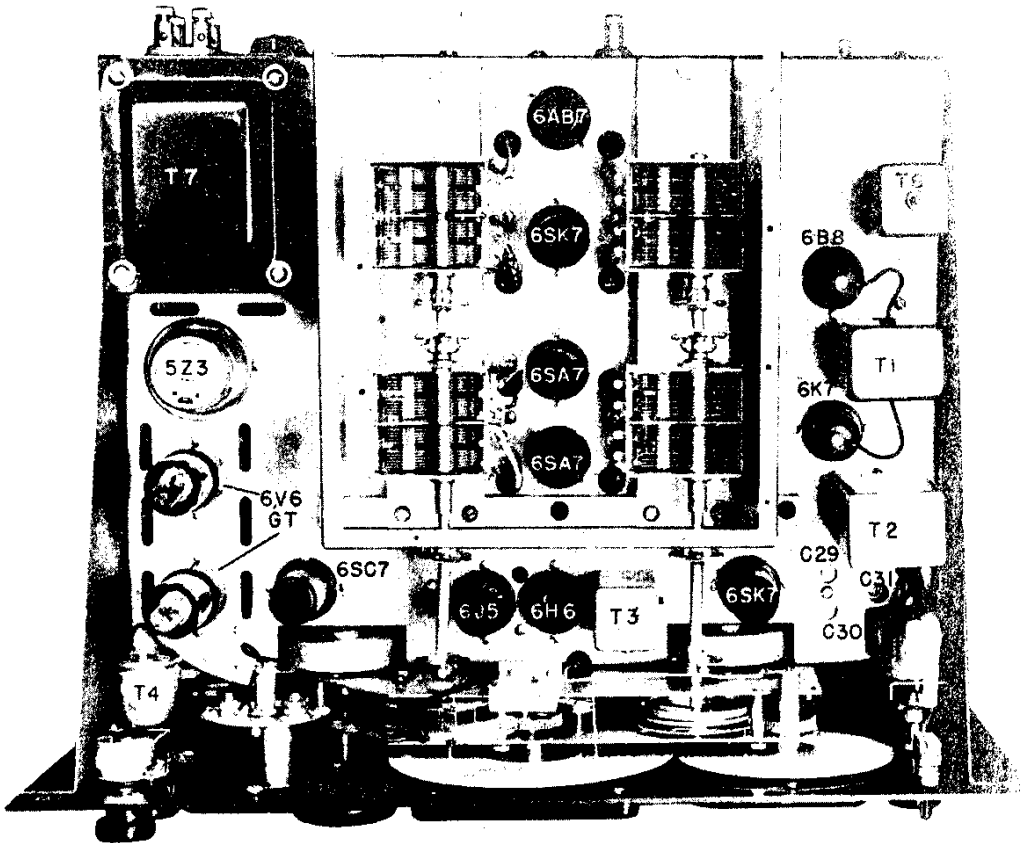
No.	Value	Voltage or Purpose	Type	No.	Value	Voltage or Purpose	Type
C 1	Band No. 1	tuning condenser	....	C38	.05 mfd	200	tubular
C 2	Main	tuning condenser	....	C39	.01 mfd	400	tubular
C 3	3 plate	band spread cond.	....	C40	500 mmf	....	mica
C 4	5 plate	band spread cond.	....	C41	30 mfd	25	electrolytic
C 5	.25 mfd	200	tubular	C42	.02 mfd	400	tubular
C 6	50 mmf	condenser	Variable Air	C43	2 mmf	....	twisted leads
C 7	1550 mmf	Band No. 6 pad	mica	C44	500 mmf	10%	mica
C 8	3160 mmf	Band No. 5 pad	mica	C45	.05 mfd	400	tubular
C 9	2830 mmf	Band No. 4 pad	mica	C46	.05 mfd	400	tubular
C10	1430 mmf	Band No. 3 pad	mica	C47	2000 mmf	....	mica
C11	790 mmf	Band No. 2 pad	mica	C48	30 mfd	450	electrolytic
C12	380 mmf	Band No. 1 pad	mica	C49	30 mfd	450	electrolytic
C13	temperature	Compensated condenser	....	C50	.02 mfd	400	tubular
C14	.02 mfd	400	tubular	C51	.01 mfd	600	tubular
C15	.02 mfd	400	tubular	C52	.01 mfd	600	tubular
C16	.02 mfd	400	tubular	C53	.05 mfd	200	tubular
C17	.05 mfd	200	tubular	C54	10 mmf	....	ceramic
C18	.02 mfd	400	tubular	C55	5 mmf	....	ceramic
C19	.02 mfd	400	tubular	C56	5 mmf	....	ceramic
C20	.02 mfd	400	tubular	C57	2 mmf	twisted leads	....
C21	.05 mfd	200	tubular	C58	10 mmf	....	ceramic
C22	.02 mfd	400	tubular	C59	5 mmf	....	ceramic
C23	.02 mfd	400	tubular	C60	2 mmf	twisted leads	....
C24	.02 mfd	400	tubular	C61	250 mmf	....	mica IN-TI
C25	2000 mmf	....	mica	C62	.02 mfd	400	tubular
C26	.02 mfd	400	tubular	C63	.05 mfd	200	tubular
C27	.02 mfd	400	tubular	C64	100 mmf	....	mica
C28	.02 mfd	400	tubular	C65	.02 mfd	400	tubular
C29	20 mmf	trimming condenser	....	C66	.05 mfd	200	tubular
C30	20 mmf	trimming condenser	....	C67	.02 mfd	400	tubular
C31	20 mmf	trimming condenser	....	C68	50 mmf	....	mica
C32	20 mmf	crystal phasing	air	C69	50 mmf	....	mica
C33	.02 mfd	400	tubular	C70	2000 mmf	....	mica
C34	.02 mfd	400	tubular	C71	100 mmf	....	mica
C35	.05 mfd	200	tubular	C72	2 mmf	twisted leads	....
C36	2000 mmf	....	mica	C73	2 mmf	twisted leads	....
C37	50 mmf	....	mica	C74	25 mmf	....	mica

MODEL SX-32 SKYRIDER RESISTORS

No.	Value in Ohms	Wattage or Purpose	No.	Value in Ohms	Wattage or Purpose
R 1	100,000	1/3	R31	11,000	Candohm 1-1/2 Watts
R 2	10,000	RF Gain	R32	4,000	Candohm 7 Watts
R 3	300	1/3	R33	500,000	Audio Gain
R 4	25,000	1/2	R34	1,000	1/3
R 5	1,000	1/3	R35	500,000	Tone Control
R 6	7,000	2	R36	100,000	1/3
R 7	100,000	1/3	R37	100,000	1/3
R 8	300	1/3	R38	2,500	2
R 9	1,000	1/3	R39	200,000	1/3
R10	3,000	1/3	R40	250,000	1/3
R11	100,000	1/3	R41	250,000	1/3
R12	400	1/3	R42	200	2 10%
R13	1,000	1/3	R43	20,000	1
R14	3,000	1/3	R44	5,000	10
R15	100,000	1/3	R45	20,000	1
R16	3,000	1/3	R46	50,000	1/3
R17	30,000	-1 watt	R47	1,000	1/3
R18	3,000	1/3	R48	200	1/3
R19	100,000	1/3	R49	250,000	1/3
R20	500,000	1/3	R50	500,000	1/3
R21	250	1/3	R51	500,000	1/3 Inside of T1
R22	60,000	1/2	R52	3,000	1/3
R23	5,000	1/2	R53	500,000	1/3
R24	100,000	1/3	R54	50,000	1/3
R25	250,000	1/3	R55	50,000	1/3
R26	5,000	1/3	R56	50,000	1/3
R27	2. meg	1/3	R57	500	1/3
R28	100	1/3	R58	8	1/3
R29	500	S Meter Control	R59	15,000	1/2
R30	1. meg	1/3	R60	50,000	1/3

MODEL SX-32, Sky Rider

THE HALLICRAFTERS INC.



A.V.C. TERMINALS FOR DUAL DIVERSITY OPERATION

S METER CONTROL

ANTENNA-GROUND TERMINALS

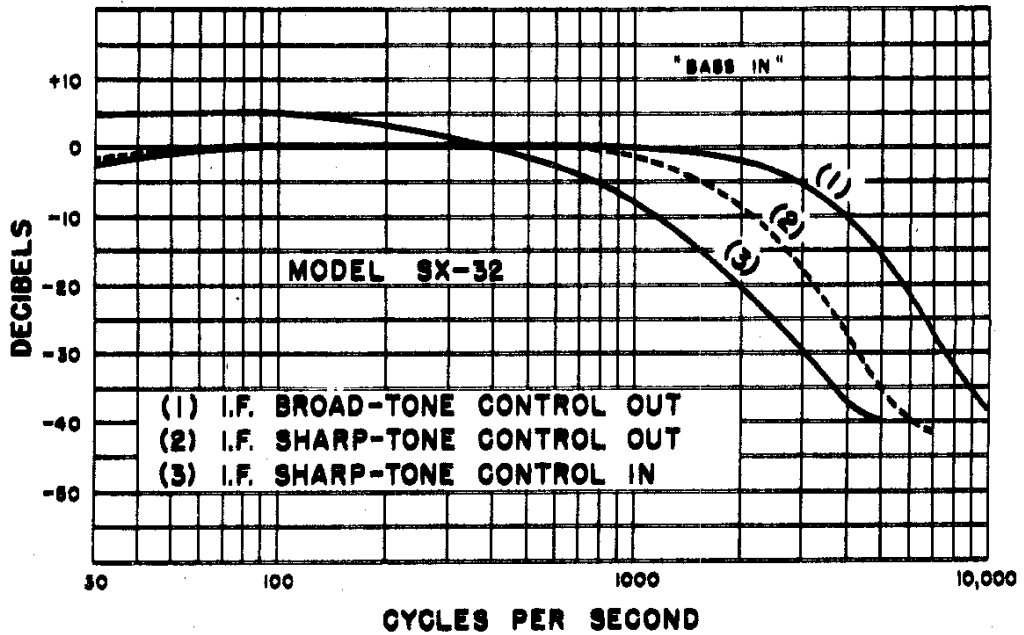
PHONO JACK

D.C. OPERATION SOCKET

SPEAKER TERMINALS

STAND BY SOCKET

THE HALLICRAFTERS INC.
AUDIO FIDELITY CURVE



The following measurements made with a 20,000 ohms per volt meter and taken from the socket terminal indicated to ground or receiver chassis. Antenna and ground were disconnected from the receiver when these measurements were taken and the RF and AF gain controls set at maximum. "DL" means Dead Lug but will indicate voltage when used as a tie. Normal tolerance allows a variation of $\pm 10\%$ from the indicated values.

TUBE	FUNCTION	SOCKET TERMINALS								
		1	2	3	4	5	6	7	8	Cap.
6AB7	RF Amp. (1)	...	...	...	...	4.5	180	6.3	245	.....
6SK7	RF Amp. (2)	...	...	4.35	0.1	4.35	120	6.3	230	.....
6SA7	Mixer	...	...	250	100	...	3.7	6.3	...	.....
6SA7	HF Osc.	...	...	120	120	0.3	...	6.3	120	.....
6K7	IF Amp. (1)	...	...	280	120	...	...	6.3	4	-.075
6SK7	IF Amp. 2	...	...	4	...	4	120	6.3	280	.....
6B8	AVC Amp.	...	...	230	0.2	0.2	120	6.3	2	.....
6H6	ANL and DET.	...	...	...	...	...	...	6.3	...	.....
6J5	Beat Osc.	...	...	130	...	-7	...	6.3	...	BFO ON ONLY FOR TEST
6SC7	1st Audio Amp.	...	140	...	...	137	1.4	6.3	...	.....
6V6GT	P.P. Audio Amp.	...	...	290	265	...	...	6.3	17	.....
6V6GT	P.P. Audio Amp.	...	...	290	265	...	...	6.3	17	.....
5Z3	Rectifier	320	340 AC	340 AC	320	...	...	...	...	.....

MODEL SX-32, Sky Rider

THE HALLICRAFTERS INC.

THE 1942 MODEL SX-32 SKYRIDER RECEIVER
INSTRUCTIONS FOR INSTALLATION, OPERATION AND SERVICE

INSTALLATION

It is recommended that, upon receipt, the carton and then the receiver be carefully examined for any damage which might have occurred in transit. Should any sign of damage be apparent immediately file claim with the carrier stating the extent of the damage. Important! (Wires were marked S, V, G, B, and A. This receiver is to be operated on a universal 110/220 volt model 50/60 cycle alternating current. This model can be operated at either of those two voltages with 25/60 cycle current. If the voltages are higher than indicated an external stepdown transformer must be used. A switch, mounted on the top of the universal transformer case, will allow convenient 110-220 volt change.

The standard model SX-32 receiver comes equipped with a cabinet for table mounting. The standard 8 1/2 x 15 1/2 inch panel dimension with holes suitably spaced makes it possible for the chassis to be mounted on a cabinet of any desired height. The cabinet length is 17 1/2 and depth 13 1/2. When the model SX-32 is so mounted, the table cabinet is replaced with a dust cover. The maximum over-all length of the receiver will then allow it to be mounted in a rack with upright channel clearance of 17 1/2.

TERMINALS AND CONNECTIONS ON REAR OF RECEIVER

SPEAKER

On the rear, again of the receiver's chassis appear two terminal strips for connecting a 500 or 2000 ohm speaker. Should a matching HALLICRAFTERS Bass-Reflex speaker be used with the receiver, it should be connected to the 5000 ohm terminals. The 500 ohm terminals can be connected to a speaker or other load of that impedance value.

ANTENNA

To the terminals marked A1-A2 and G should be connected the antenna you have chosen to use with the model SX-32 receiver.

Very satisfactory results throughout the tuning range of the SX-32 will be obtained with a conventional inverted "L" Marconi type of antenna 75 to 100 feet long including lead-in. This antenna should be erected as high as possible and removed from surrounding obstructions to insure that the signal strength is not affected. When this type of antenna is used it is connected to terminal A-1. The jumper between A-2 and G should remain connected.

In the event a doublet antenna is used with the model SX-32 SKYRIDER receiver, the two wires of the doublet lead-in should be connected to terminals A1 and A2. The jumper between A2 and G can remain connected or removed, depending upon its effect on favorable reception.

A ground can be used if desired and should be connected to the G terminal. Connecting the receiver to a good ground (gold water pipe or 6 foot rod driven in moist soil) might improve reception. A difference will exist so a ground is suggested only if it aids reception.

A similar plug to the shorting plug should be wired as shown on the schematic diagram and connected to an external source of DC power. The DC operation plug is then inserted in the socket and operation from batteries or a vibrator pack is secured.

270 volts of plate voltage, or B supply, at 150 milliamperes current are necessary for successful operation of the receiver, should it be operated in this manner.

"S" METER ZERO SET

"S" METER CONTROL is obtained by varying the knurled knob appearing on the left hand chassis apron edge. This control enables you to properly set the "S" meter. To make the adjustment correctly, the RF GAIN CONTROL should be set to its maximum as far as it will go. In addition, the switch directly below the bandspread hand-wheel must be in the AVC-ON position.

ALIGNMENT PROCEDURE MODEL SX-32 SKYRIDER

Equipment Needed for Aligning:

- 1—An all wave signal generator which will provide an accurately calibrated signal at the test frequencies indicated.
- 2—Output indicating meter connected to 5000 ohm output terminals.
- 3—Non-metallic screw driver.
- 4—Dummy antenna of 200 mmf and also 400 ohm carbon resistor.

Setting of controls prior to alignment—IF and RF.

Tone control at maximum high frequency position (#9)—BFO at 0—AF Gain at #9—RF Gain at #9—Band switch—IF alignment position .5 to 1.4 band, I—RF alignment depending on band aligned.

Selectivity control sharp IF. Send-Receive switch in Receive, Crystal phasing at #3 on left side, ANI—OFF, AVC OFF.

Important: Have bandspread control so logging scale reads 100.

Antenna trimmer adjusted for Maximum gain at each RF alignment point on Bands 3-5-6.

Notes: Antenna trimmer not in circuit on bands 1 and 2. 455 KC—IF Alignment: Tune main dial to 1400 kc on 5 to 1.4 mc band. Connect the hot lead from the signal generator to 68A7 mixer terminal #8—Ground to chassis. Roughly adjust the aligning screws of T1, the lower screw of which is accessible through hole in right mounting bracket, for maximum gain. Now adjust lower screw on T2 (do not adjust upper screw). Also adjust C31 and the trimmer screws at the top of T3 for maximum gain.

Switch to Crystal Broad Position—Turn on BFO and adjust to a tone of about 1000 cycles. Vary the frequency of the signal generator while adjusting the top screw on T2 until the output goes through a maximum, dips down and starts going up again. Adjust the phasing control for maximum selectivity and then back off the top screw

Position. When these conditions have been completed then remove the antenna from the Receiver and then adjust the S meter control until the S meter reads zero. Reconnecting the antenna to the receiver will make the meter indicate the relative carrier strength of each incoming signal as various signals are tuned in.

The large calibrated main dial shows the frequencies covered throughout the 6 band, 500 KC to 42 mc frequency range of the receiver. They are as follows:

- Band 1—500 to 1400 kilocycles
- Band 2—1.4 to 2.7 megacycles
- Band 3—2.7 to 5.3 megacycles
- Band 4—5.3 to 11 megacycles
- Band 5—11 to 21 megacycles
- Band 6—21 to 42 megacycles

on T2 until the output reaches a minimum value between the two maximum values first noted. The frequency of the signal generator should be varied over a small range while adjusting the top screw of T2. A swishing noise, in contrast to the usual sharp crystal tone will be apparent when the correct adjustment has been reached.

Switch to "Xtal Sharp" and adjust C-30 for maximum output while varying signal generator frequency. Two points of maximum output will be noted corresponding to two adjustments of C-30. Either one of these points may be used at which to leave C-30. A sharply peaked tone will result at the correct adjustment.

Switch to "Xtal Medium" and adjust C-30 till the output is midway between the outputs reached while aligning the "Xtal Sharp" and "Xtal Broad" positions. The apparent sharpness of tone should be midway between the "Sharp" and "Broad" positions.

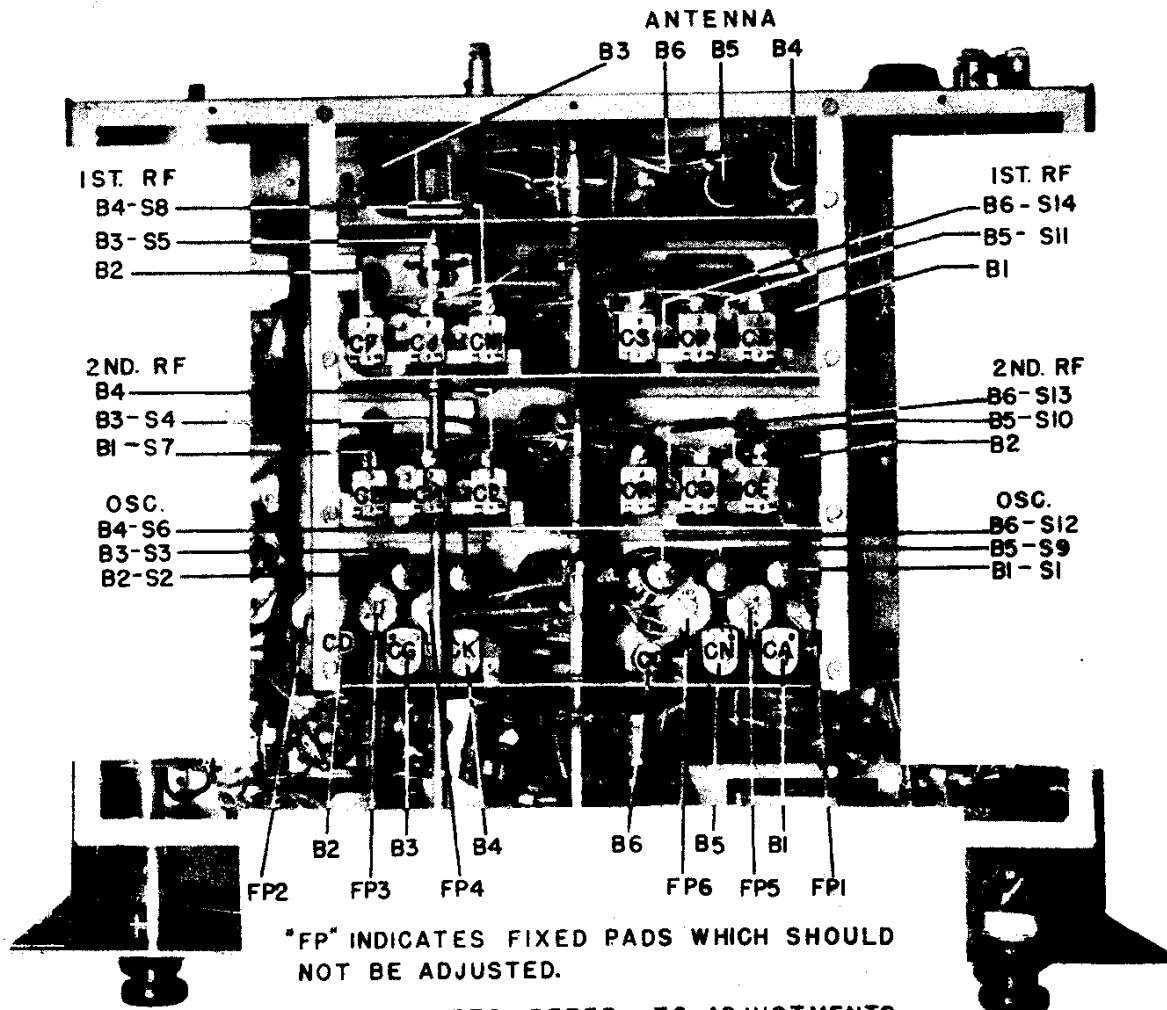
Switch again to "Xtal Sharp" and set the signal generator to exact crystal frequency. Set BFO front panel control to a tone of approximately 1000 cycles. Switch again to "Sharp IF" and carefully realign the IF transformers as earlier described in the first paragraph of these instructions.

Best Frequency Oscillator Adjustment.—In the center of the "Pitch Control" shaft, after the knob has been removed, you will find a recessed screw for the adjustment of the Best Frequency Oscillator. Before rotating this screw, the antenna should be disconnected and the screw wrench from the top. With the signal generator connected to the 68A7 mixer terminal #8 as above, the generator set to the frequency of the crystal, and the BFO switch on adjust the screw in the center of the pitch control till zero beat is heard. Tighten the set screw and assemble the knob so that this zero beat position will occur in the center of the total angular rotation of the pitch control knob.

AVC Amplifier Adjustment.—Connect a high resistance voltmeter across resistors R-49 and R-54. With the signal generator tuned to the crystal frequency as above, adjust the trimming screw on top of R-6 till the voltmeter reads maximum.

THE HALLICRAFTERS INC.

MODEL SX-32, Sky Rider



RF ALIGNMENT

Connect hot lead of signal generator to A₁—through dummy antenna shown in table. Leave jumper connected between A₂ and G. Ground of Generator to Chassis.

Band	Rec. Dial Setting	Sig. Gen. Freq.	Dummy Antenna	HIGH FREQUENCY END		LOW FREQUENCY END	
				Adjust Osc. With	Adjust Trimmers for Max. Gain	Adjust Osc. With	Permeability Tuned By
1	1.2 mc	1.2 mc	200 mmf	C _A	C _B C _C	.....	.....
1	.6	.6	200 mmf	.....	.....	S ₁	.....
2	2.6	2.6	400 ohms	C _D	C _E C _F	.....	.....
2	1.5	1.5	400 ohms	.....	.....	S ₂	.....
3	5	5	400 ohms	C _G	C _H C _J	.....	.....
3	3.0	3	400 ohms	.....	.....	S ₃	S ₄ S ₅
4	10	10	400 ohms	C _K	C _L C _M	.....	.....
4	5.6	5.6	400 ohms	.....	.....	S ₆	S ₇ S ₈
5	20	20	400 ohms	C _N	C _O C _P	.....	.....
5	11	11	400 ohms	.....	.....	S ₉	S ₁₀ S ₁₁
6	38	38	400 ohms	C _Q	C _R C _S	.....	.....
6	22	22	400 ohms	.....	.....	S ₁₂	S ₁₃ S ₁₄

is to fall on the grid of the output 6C7 triode. Screen,...

THE POWER SUPPLY

The power supply in the Model SX-32 is quite unusual...

The filter circuit consisting of a grid of 60 grids of...

SPECIFICATIONS

- 1-6AB7 Ior RF Amplifier
1-6X47 Ior RF Amplifier
1-6SA7 Ior RF Amplifier
1-6X47 Ior RF Amplifier
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Power Consumption—at 117 volts—60 cycles—1.38 watts
Power Consumption—DC operation—18 amp. at 6 volts
or 1.08 watts

Power Output—(for 35 watts output) Bands 1 to 5—2 MV
and under, 6th band 4 MV

Selectivity—RF input (high fidelity) 12 db
RF input 20 db
IF input 20 db
IF output 20 db
IF output 20 db
IF output 20 db
IF output 20 db
IF output 20 db
IF output 20 db
IF output 20 db
IF output 20 db

Frequency response AF band 100-2000 cycles = 20% DB
Special Output Impedance—5000 and 500 ohms
Intermediate Frequency—455 kc
Table cabinet dimensions—20 1/2" high x 10 1/2" deep x 14 1/2" wide
Relay lock door cover dimensions—14 1/2" deep x 17 1/2" high
Panel dimensions—18 1/2" x 17 1/2"
Cabinet dimensions—18 1/2" x 17 1/2" x 14 1/2"
Weight—(complete)—7 1/2 lbs.—gross 87 lbs.

AVC ACTION
A double AVC system is used. The RF and mixer tubes are operated by the normally tuned circuit...

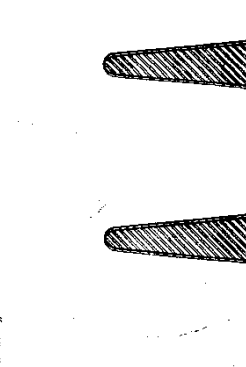
OR SIGNAL INTENSITY METER
The approximate DB per 5 volt equivalent is 6 DB's. As is known, a DB, or decibel, is a unit of change...

THE SECOND DETECTOR
As will be noted, a diode type of second detector is used in the Model SX-32. Its choice was prompted by...

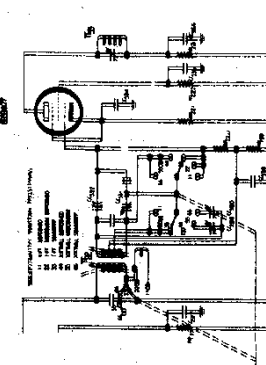
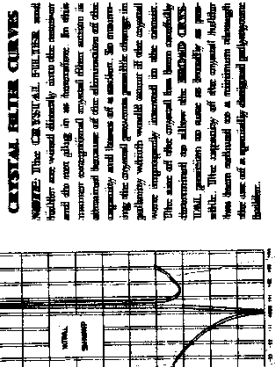
THE BEAT FREQUENCY OSCILLATOR
The BFO is tuned on with the switch below the bandspread handle and adjusted by the slotted knob...

THE AUDIO AMPLIFIER
The output or output stage of the audio amplifier in the Model SX-32 receiver uses two 6X47 tubes connected in push-pull. These tubes are driven by the 6C7 diode output stage...

CRYSTAL FILTER CURVES
In operation, a 2.3 Mc crystal is substituted in the circuit across the crystal filter. The crystal filter is accurately tuned to the crystal frequency...



CRYSTAL FILTER CURVES
NOTE: The CRYSTAL FILTER and holder are used directly into the receiver and do not plug in as heretofore. In this receiver, the crystal filter section is situated because of the dimensions of the capacity and inductance of the circuit...



SINGLE SIGNAL ADJUSTMENT
It is extremely simple to obtain single signal operation with the SX-32. First, turn on the BFO to the channel being used...

Adjusting controls for the crystal filter section. Because the crystal filter is used directly into the receiver, it is not necessary to adjust the crystal filter section...

