

Audio output - 3.5 watts.

IF PEAKED AT 1600 KC

THE HALLCRAFTERS INC.	
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**NEW Ultra SKYRIDER**

The 1937 Ultra-SKYRIDER receiver is a four band receiver tuning the frequencies as follows:

- 1 Band - 53.5 Meters to 26.4 Meters (5.6 MC to 11.4 MC)
- 2 Band - 28.5 Meters to 14. Meters (10.5 MC to 21.4 MC)
- 3 Band - 15.1 Meters to 7.85 Meters (19.8 MC to 38.2 MC)
- 4 Band - 8.1 Meters to 3.76 Meters (37. MC to 79.5 MC)

HALLCRAFTERS, INC.

MODEL S-10  
Ultra Skyrider  
Schematic

MODEL S-10  
Ultra Sky rider  
Socket, Trimmers

HALLICRAFTERS, INC.

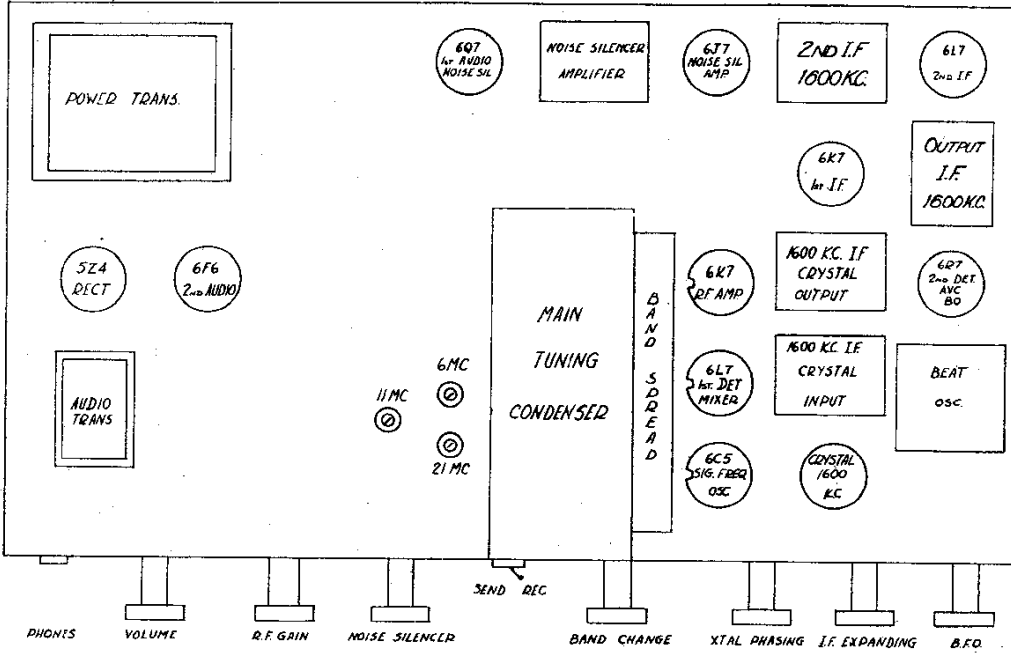
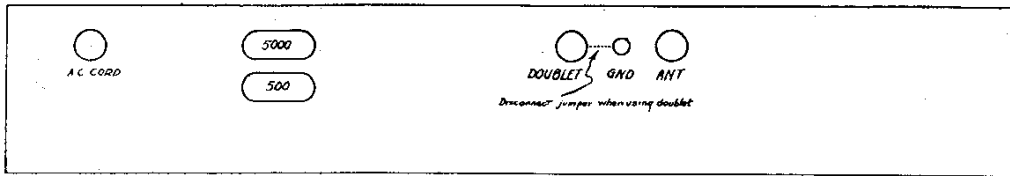


Fig. 1

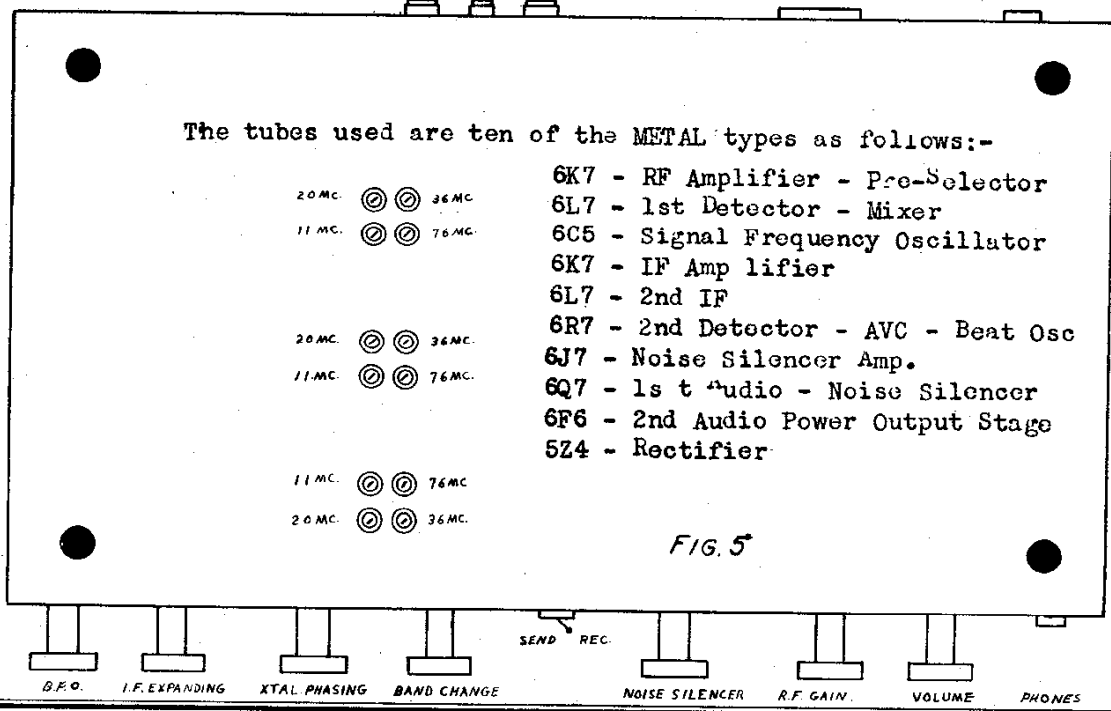


FIG. 5

The tubes used are ten of the METAL types as follows:-

- |                |        |                                     |
|----------------|--------|-------------------------------------|
| 20 MC. (⊙) (⊙) | 36 MC. | 6K7 - RF Amplifier - Pre-Selector   |
| 11 MC. (⊙) (⊙) | 76 MC. | 6L7 - 1st Detector - Mixer          |
|                |        | 6C5 - Signal Frequency Oscillator   |
|                |        | 6K7 - IF Amplifier                  |
|                |        | 6L7 - 2nd IF                        |
| 20 MC. (⊙) (⊙) | 36 MC. | 6R7 - 2nd Detector - AVC - Beat Osc |
| 11 MC. (⊙) (⊙) | 76 MC. | 6J7 - Noise Silencer Amp.           |
|                |        | 6Q7 - 1st Audio - Noise Silencer    |
|                |        | 6F6 - 2nd Audio Power Output Stage  |
|                |        | 5Z4 - Rectifier                     |

Intermediate Frequency Alignment.

If the receiver is equipped with a crystal, use the crystal in a separate oscillator.

If the receiver is not an SX10 model set the signal generator for 1600 KC output.

Before I.F. or R.F. alignment see that:

Expander is in the "sharp" position.

B.F.O. switch off.

Audio gain control set at maximum.

R.F. gain control set at maximum.

A.V.C. switch off.

Crystal switch off.

Crystal phasing condenser adjusted for maximum noise level.

Noise silencer control set at 50% rotation.

Do not remove the bottom plate from the chassis.

Remove 6C5 oscillator tube from its socket and connect generator output directly to the grid of the 6L7 1st Detector.

As an output indicator it is suggested a 0-3 volt A.C. Voltmeter be connected across the speaker voice coil.

Align all I.F. trimmers for maximum output.

To adjust noise silencer circuit, set generator output for a strong signal (200MV). Slowly turn noise silencer control clockwise until there is a noticeable dip in the output meter. Now the trimmer on the noise silencer can directly behind the main tuning gang should be tuned for a dip. Adjust noise silencer control and trimmer until maximum rejection of signal is obtained. After this adjustment has been reached set the noise silencer control at a position where rejection of signal just starts to take place. Now retrim the plate trimmer of second I.F. (See which is plate trimmer by shorting trim screw against can for a spark.) The I.F. alignment of the receiver is now complete.

R.F. ALIGNMENT

Check dial - at maximum capacity of gang condenser the dial should stop so that "0" on the dial is opposite "5" on Vernier scale; the pointer which indicates bands should then be on the black line of the dial.

Put the 6C5 tube back in oscillator socket.

Connect generator output through 400 ohm resistor to antenna and ground posts on receiver. (Juniper should remain connected.)

Be sure band spread condenser is set at 200 degrees or minimum capacity position.

Set generator for 100 meg output signal at maximum output of generator. During alignment back off on R.F. gain control or the gain on the generator once the signal is heard. Leave the audio control in maximum position at all times.

Set Band Switch to highest frequency range; 38 to 79 megacycles.

Check 40 megacycles on dial for calibration.

If no signal is heard at 40 megacycles and a good signal is heard at 50 megacycles try changing the 6C5 oscillator tube until one which will oscillate at 40 megs is obtained. May be necessary to try various makes of tubes until a good one is obtained.

After signal heard at 40 megacycles, re-set dial to 60 megs. Now adjust the 60 MC trimmer in oscillator section until signal is heard.

Re-set dial to approximately 63 megs and check for image. If image is heard at 63 megs you are on the right side. Note-image is on the high frequency side on this hand.

Return dial to 60 megs and peak R.F. and antenna 60 MC. trimmers for greatest output.

Not go back to 40 megs and make sure you are getting a good signal. While R.F. and antenna trimmers are being peaked the main tuning gang should be rocked back and forth across the signal.

-----  
Change band switch to position covering 20 to 38 MC.

Set generator for 6 MC signal.

Set dial at 20 megacycles.

Adjust 20 MC pad on top of chassis until signal is heard.

Re-set dial to 36 MC

Trim 36 MC Oscillator trimmer until signal is heard.

Check for image at 33 megs. Note image is on Low Frequency side.

Now peak R.F. and antenna trimmers for maximum output, rocking main tuning gang while peaking.

Recheck at 20 MC for calibration. A signal should also be heard at 24, 30 and 36 megs, using 6 megacycle signal input.

-----  
Set Band switch to 20 to 11 megacycle position.

Set signal generator for 11 megs output.

Set dial at 11 megs. Trim oscillator pad on top of chassis for signal.

Set generator to 20 meg signal.

Set dial for 20 megs. Adjust oscillator trimmer below chassis for signal.

Now adjust R.F. and antenna trimmers for maximum output, rocking main tuning gang while peaking.

Go back and re-check at 11 megacycles.

-----  
Set band switch to 5.5 to 1 megacycle position.

Set generator for 6 MC output.

Set dial to 6 MC - adjust 6 MC pad on top of chassis until signal is heard.

Set generator to 11 MC.

Set dial to 11 MC - adjust oscillator trimmers underneath chassis for signal.

Now peak R.F. and antenna trimmers for maximum output, rocking main tuning gang while peaking.

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It may be necessary to go through the above procedure on each band two or three times before maximum performance is secured. A small change at one end of each band will affect the other end.  
CRYSTAL FILTER INPUT TRANSFORMER - this transformer is made up of 3 coils phased in such a relation that maximum signal is impressed upon the low inductance primary of 2nd IF transformer. The crystal and crystal phasing circuit is inserted between these transformers in crystal phasing condenser cause single signal action to take place - this action varies by the setting of crystal phasing condenser - when switch is at "cut" position the signal is impressed directly on the second transformer. Crystal filter output transformer has a set-up ratio so that the voltage impressed on grid of 6K7, I.F. Amplifier, is increased over the normal IF transformer connections. By the use of a transformer the grid circuit of this tube is tuned to the I.F. frequency so that greater selectivity is achieved, than if a choke coil is used to supply this tube.