

## Communication Receiver Model SX104 Mark 1



Fig. 1. Model SX104

### SPECIFICATIONS

Tubes and Rectifiers.....	8 tubes and 1 selenium rectifier
Speaker.....	5 inch PM
Voice Coil Impedance.....	3.2 ohms
Headphone Output Impedance.....	50-5000 ohms
Antenna Input Impedance.....	300 ohms
Antenna.....	Vertically polarized whip or doublet
Intermediate Frequency.....	10.7 MC
Power Supply.....	105-125 volts 60 cycle AC
Frequency Coverage.....	30 to 50 MC
Dimensions (overall).....	7-1/2" High x 13" Wide x 8-3/4" Deep
Net Weight.....	11-1/2 Lb.
Shipping Weight.....	13-1/2 Lb.

### SQUELCH RANGE CONTROL ADJUSTMENT

The Squelch Range control (Figure 3) adjusts the operating point of the output section of the 12AU7 squelch tube (V-8). This control has been carefully adjusted at the factory for proper operation and will normally not

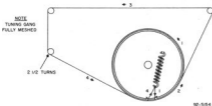


Fig. 2. Dial Cord Stringing Diagram

require readjustment unless the squelch tube, relay, or components in the squelch circuit have been replaced. If adjustment is necessary, proceed as follows:

1. Connect a DC milliammeter (0-15 ma) in series with the squelch relay, RY-1, in the plate circuit of the squelch tube, V-8.
2. Set the Volume control at maximum, the Squelch Range control fully clockwise (minimum resistance) and the Squelch control on the front panel fully counterclockwise (maximum resistance) but not at "Off".
3. Tune the receiver to noisy part of the band where no signal is present.
4. With no signal tuned in, slowly rotate the Squelch Range control counterclockwise until the noise is just squelched (disappears). At this point the relay contacts are closed and the grid of the audio output tube is shorted to ground. Note the plate current reading of the squelch tube (should be anywhere from 6.5 to 10.25 ma), and then continue to advance the Squelch Range control until the plate current drops 2 ma from that obtained at the point of squelch. This is the proper setting of the Squelch Range control.

If a milliammeter is not available, the Squelch Range control can be "roughly" set by adjusting the Squelch Range control to the point of squelch as outlined above and then advancing the control 65° farther counterclockwise.

### CRYSTAL OPERATION

The Hallicrafters Model SX104 is designed for crystal use, although crystals are not supplied with the receiver. It is advantageous to use this feature if considerable use of some particular frequency is expected. By selecting the proper crystal to cover the desired frequency, more stable reception of this frequency will be attained. Select the crystal you want, according to the formulas which follow, and insert it in the crystal socket located on the chassis base, just to the left of the autotuner near the front panel. Set the operation switch to the crystal position and tune in the frequency desired. The following formulas should be used for selecting the proper crystal:

- SX104 Crystal Frequency = Signal frequency desired  
 (MC) + 10.7 MC  
 3rd Mode Crystal - Low End 29 MC - High End 51 MC  
 Range of Crystal = 39.7 MC to 61.7 MC

## ALARM CONNECTIONS

On the back of your receiver are two terminals marked **ALARM**. Connecting a bell or light alarm circuit to these terminals will permit visual or audible notification when a signal is on the air. Whatever alarm circuit

is used must be self-powered as the receiver provides only the necessary switching to actuate the alarm. The alarm circuit should be of low voltage (24 volts or less).

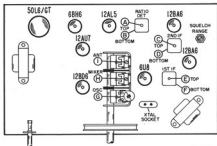
To turn the receiver off, rotate the Volume control fully counterclockwise, until a click is heard.

## IF ALIGNMENT

- Use a 10.7 MC signal generator, either amplitude modulated or unmodulated.
  - Connect high side of generator through a .01 mfd. capacitor to pin 7 of V-2; connect low side to chassis.
  - Set function switch to tunable position
1. Connect DC probe of VTVM to pin 2 of V-5; common lead to chassis. Adjust B, C, D, E, and F for maximum output.
  2. Connect two 470,000 ohm resistors in series between pin 2 of V-5 and the chassis. Connect DC probe of VTVM to junction of R-10 and C-16; common lead to center tap of the two 470,000 ohm resistors. Adjust A for zero reading between a positive and negative peak. The two peaks should have approximately the same amplitude. If not, readjust B slightly and then touch up A.

## RF ALIGNMENT

- Use a signal generator either amplitude modulated or unmodulated which covers 33 MC and 49 MC.
  - Connect high side of generator through a 270 ohm resistor to terminal "A" on antenna terminal strip on rear of chassis; low side to terminal "G".
  - Use a non-metallic alignment tool.
  - Set function switch to tunable position.
1. Set generator and receiver dial to 49 MC and adjust G, then H, and then I for maximum output. When adjusting I, "rock" tuning capacitor slightly.
  2. Check calibration at low end of receiver by setting generator and receiver dial to 33 MC. A calibration adjustment is usually not necessary and should not be made unless the oscillator coil on the top front of the tuning gang has been replaced. If adjustment is required, the oscillator coil lead connected to the chassis should be unsoldered and its length varied until maximum output is obtained at 33 mc.



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Fig. 3. Tube Location and Alignment Adjustments



