



C487-07-P

Location of Adjustments
 Figure 4-1

3.1 BLOCK DIAGRAM

Refer to figure 3-1. The KWM-2/2A is an SSB or CW transceiver operating in the range between 3.4 and 30.0 MHz. It consists of a double-conversion receiver and a double-conversion exciter-transmitter. The transmitter and receiver circuits use common oscillators and a common mechanical filter as well as a common rf amplifier. The transmitter low-frequency if and the receiver low-frequency if is 455 kHz. The high-frequency if for both is 2.955 to 3.155 MHz. This is a bandpass if that accommodates the full 200-kHz bandwidth. Figure 7-1 is a schematic diagram of the KWM-2/2A.

3.2 TRANSMITTER CIRCUITS

3.2.1 AF Circuits

Microphone or phone-patch input is connected to the grid of first audio amplifier V1A, amplified, and coupled to the grid of second audio amplifier V11B. Output from V11B is coupled to the grid of cathode follower V3A through MIC GAIN control R8. Output from the cathode follower is fed to the resistive balance point of the balanced modulator. In TUNE, LOCK, and CW positions of the EMISSION switch, output from tone oscillator V2B is fed to the grid of the second audio amplifier. The amplified tone oscillator signal is taken from the plate of V11B and coupled to the grid of VOX amplifier V14B to activate the VOX circuits in CW operation. This signal is also fed to the grid of first receiver af amplifier V16A for CW monitoring.

3.2.2 Balanced Modulator and Low-Frequency IF Circuits

Audio output from the cathode of V3A and the bfo voltage are fed to a diode quad balanced modulator (CR1, CR2, CR3, and CR4). Both upper and lower sideband outputs from the balanced modulator are coupled through if trans-

former T1 to the grid of the if amplifier, V4A. Output from the if amplifier is fed to mechanical filter FL1. The passband of FL1 is centered at 455 kHz. This passes either upper or lower sideband, depending upon the sideband selected when the EMISSION switch connects bfo crystal Y16 or Y17. The single-sideband output of FL1 is connected to the grids of the first transmitter mixer in push-pull.

3.2.3 Balanced Mixers

The 455-kHz single-sideband signal is fed to the first balanced mixer grids in push-pull. The plates of the mixer are connected in push-pull, and vfo signal is fed to the two grids in parallel. The mixer cancels the vfo signal energy and translates the 455-kHz single-sideband signal from the balanced modulator to a 2.955- to 3.155-MHz single-sideband signal. The T2-L4 combination between the first and second mixer provides broadband response to the 200-kHz variable if output (2.955 to 3.155 MHz) from the first transmit mixer, V5. The bandpass if signal is fed to one of the grids of the second balanced mixer, and the high-frequency injection signal energy from crystal oscillator V13A is fed to the cathode and the other grid. This arrangement cancels the high-frequency injection signal energy within the mixer and translates the bandpass if signal to desired operating band.

3.2.4 RF and ALC Circuits

The slug-tuned circuits coupling V6 to V7, V7 to V8, and V8 to the power amplifier are ganged to the EXCITER TUNING control. The signal is amplified by rf amplifier V7 and driver V8 to drive the power amplifier, V9 and V10. Output from the parallel power amplifiers is tuned by a pi-network and fed to the antenna through contacts of transmit-receive relay K3. Negative rf feedback from the pa plate circuit to the driver cathode circuit reduces distortion in the output signal. Both the driver and pa stages