while the charging of larger capacitor C88 gives a slow AVC release time. Resistors R80, R122, R123, and R124, with capacitor C123, divide the AVC voltage applied to V9 and V12A and provide decoupling. To provide delayed AVC, resistor R123 is returned to the cathode of V12B rather than to ground. This balances the AVC voltage (caused by noise when no signal is being received) with a small positive voltage to improve receiver sensitivity at low signal levels.

AUDIO FREQUENCY OUTPUT AMPLIFIER V12A

Amplified audio signals from V12A are fed to the speaker socket through output transformer T4. To provide maximum intelligibility, the frequency response of the output stage is limited to the voice frequency range by a sharp-cutoff, high frequency, degenerative feedback loop. High frequencies across RFC120 causes its impedance to rise. The high frequencies are thus returned out-of-phase to the grid of V12B. This signal cancels out the incoming high frequency audio and noise signals at the grid of V12B. Capacitor C120 is a low frequency bypass to ground, and capacitor C127 serves as a parasitic oscillation suppressor.

CARRIER OSCILLATOR

Carrier oscillator V11B supplies an RF signal to the balanced modulator, and a heterodyning signal to product detector V11A. Tube V11B is a Colpitts type oscillator. Crystal Y1 determines the operating frequency to accurately maintain the proper frequency relationship with the crystal filter bandpass frequencies. Capacitors C117 and C118 provide feedback to maintain oscillation. The output is taken from the junction of capacitors C115 and C116.

VFO

Variable frequency oscillator V13 is also a Colpitts type oscillator, which operates at low frequencies for maximum stability. Coil L5 provides the necessary inductance, while capacitors C132, C133, and C134 form a divider for oscillator feedback and output connections. C130 is a negative temperature coefficient capacitor for temperature correction. The oscillator output is taken from the junction of capacitors C133 and C134, and is applied to cathode follower V14. The harmonics are suppressed by capacitor C134. The signal output from V14 is connected to receiver mixer V8B through capacitor C142, and to transmitter mixer V4 through a filter circuit comprised of choke RFC140, and capacitors C140 and C141. The filter circuit separates the VFO frequencies from the IF and RF signals also present at this point, thus stopping signal leakthrough which would cause spurious oscillation in the IF stages.

ACCESSORY CRYSTAL CALIBRATOR

The accessory plug-in crystal calibrator is turned on by pulling out the knob of the AF Gain control. The calibrator filament circuit is grounded internally to the calibrator chassis. For this reason, the calibrator chassis must not be grounded to the transceiver chassis. Resistor R6 is the calibrator plate current return; resistor R5 drops the calibrator filament voltage to 6 volts.

FILAMENTS

The filament wiring of the Transceiver is a series-parallel arrangement that balances the filament voltage without wasting power in dropping resistors. This filament arrangement allows the use of both 6 volt and 12 volt filament tubes in the Transceiver design. The filaments of RF power amplifiers V6 and V7 are isolated by choke RFC60 to prevent RF energy from getting to the other tube filaments.

POWER SUPPLY

Operating voltages for the Transceiver are provided by an external power supply. The power supply is turned on or off by a switch on the rear of the Transceiver Function switch. This off-on switch is wired through the Transceiver power plug to the external power supply.