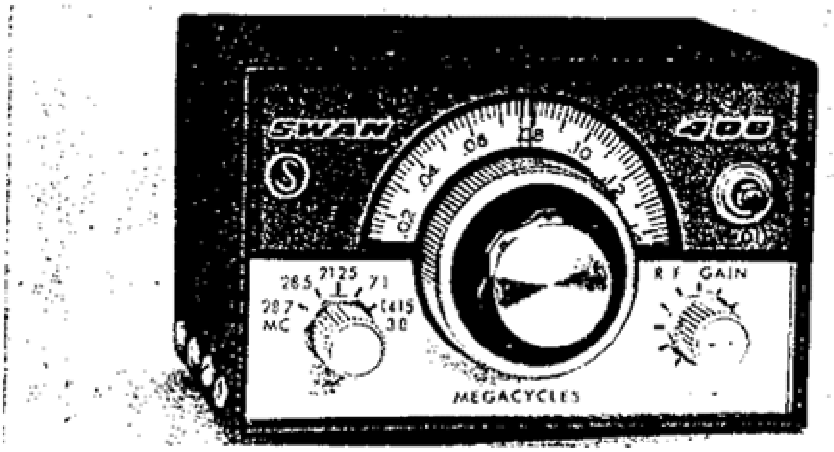
II MODEL 406 FREQUENCY CONTROL UNIT



Model 406 Frequency Control Unit is designed for full phone band coverage of 80, 40, 20 and 15 me meters, plus two 200 kc segments of the 10-meter band. The unit is specifically intended for mobile operation, and provisions for mobile mounting have been incorporated.

CIRCUIT THEORY

Q1, the 2N706 Oscillator operates in the common base configuration as a Colpitts oscillator. See Figure 6. Capacitors C1802 and C1803 are in parallel with C1804 the main tuning control across the coil, L1801. Capacitors C1801, C2001, and C2003 effectively tap the oscillator across only about 10 percent of the tank circuit. This results in exceptional stability. Q2, the Emitter Follower, is used for matching the impedance of the coaxial cable to the transceiver, not for stability purposes. Band-switching is accomplished by tapping the main coil, L1801, and providing vernier adjustment coils L1802 through L1805 for setting the low end of the tuning range. With proper vernier coils and trimmers, the Model 406 may be used to cover any 200-kc segment in the 80- through 10-meter amateur bands.

INSTALLATION

A universal mounting bracket and mounting screws are supplied with the Model 406. This bracket may be either top mounted, or bottom mounted, depending on where the 406 is to be mounted in the car. Many of the newer cars have a padded overhang. In other cases, attaching the mounting bracket to the bottom of the 406 will allow installation on a top surface, for instance, on '63 and '64 Chevrolets, a row of small holes are provided along the sides of the 406 cabinet for top mounting of the bracket. You will find that the bracket will also allow tilting of the 406. For bottom mounting, it will be necessary to drill additional holes along the bottom of the cabinet. Remove the cabinet first, and you will find chassis holes already provided for this purpose. Simply add these same holes to the cabinet.

ALIGNMENT

Alignment of the Model 406 requires only the use of a general coverage receiver tuning the frequency ranges between 8 mc and 24 mc. Calibration of the receiver is not critical since the crystal calibrator in the transceiver is used for final adjustment but the receiver must be accurate within 50 kc to permit selection of the proper 100 kc harmonic.

FOR MINOR FREQUENCY ADJUSTMENTS, which may be required after the initial aging period, simply remove the cabinet cover and very carefully adjust the trimmer capacitor marked for the specific range.

FOR MAJOR FREQUENCY ADJUSTMENTS

Tune Frequency Control Unit to low end of frequency range, and locate heterodyne with general coverage receiver at frequency indicated in the following table. Adjust vernier coil to bring heterodyne within a few kc of the receiver frequency, then switch on calibrator and adjust vernier coil for zero beat with calibrator at 100 kc increment of dial. Move tuning to high end of tuning range and adjust trimmer capacitor for zero beat. Repeat high and low end adjustments until calibration is correct at both ends. Coil and capacitor locations are marked in the unit.

BAND	RCVR FREQ. (kc)	ADJUST COIL (Low end)	ADJUST CAP. (Hi end)
3.8-4.0 14.15-14.35	Low-High 8973-9173	L1805	C1811
7.1-7.3	12,273-12,473	L1804	C1809
21.25-21.45	16,077-16,277	L1803	C1807
28.5-28.7	23,327-23,527	L1802	C1806
28.7-28.9	23,527-23,727	No Adjust	C1805