

SWAN MODEL 406B FREQUENCY CONTROL UNIT

Model 406B Frequency Control Unit is designed for full phone band coverage of 80, 40, 20 and 15 meters, and one 500 kc segment 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 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, as well as for isolation. The band-switch selects the appropriate coil and trimmer for each range. Dial tracking is adjusted with the core and trimmer. With proper adjustment of coils and trimmers, the Model 406B may be used to cover any 200-kc segment in the 80- through 15-meter amateur bands, and any 500 kc segment of the 10 meter band.

INSTALLATION

A universal mounting bracket and mounting screws are supplied with the Model 406B. This bracket may be either top mounted, or bottom mounted, depending on where the 406B 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 406B will allow installation on a top surface. A row of small holes are provided along the sides of the 406B cabinet for top mounting of the bracket. You will find that the bracket will also allow tilting of the 406B. 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 406B 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.

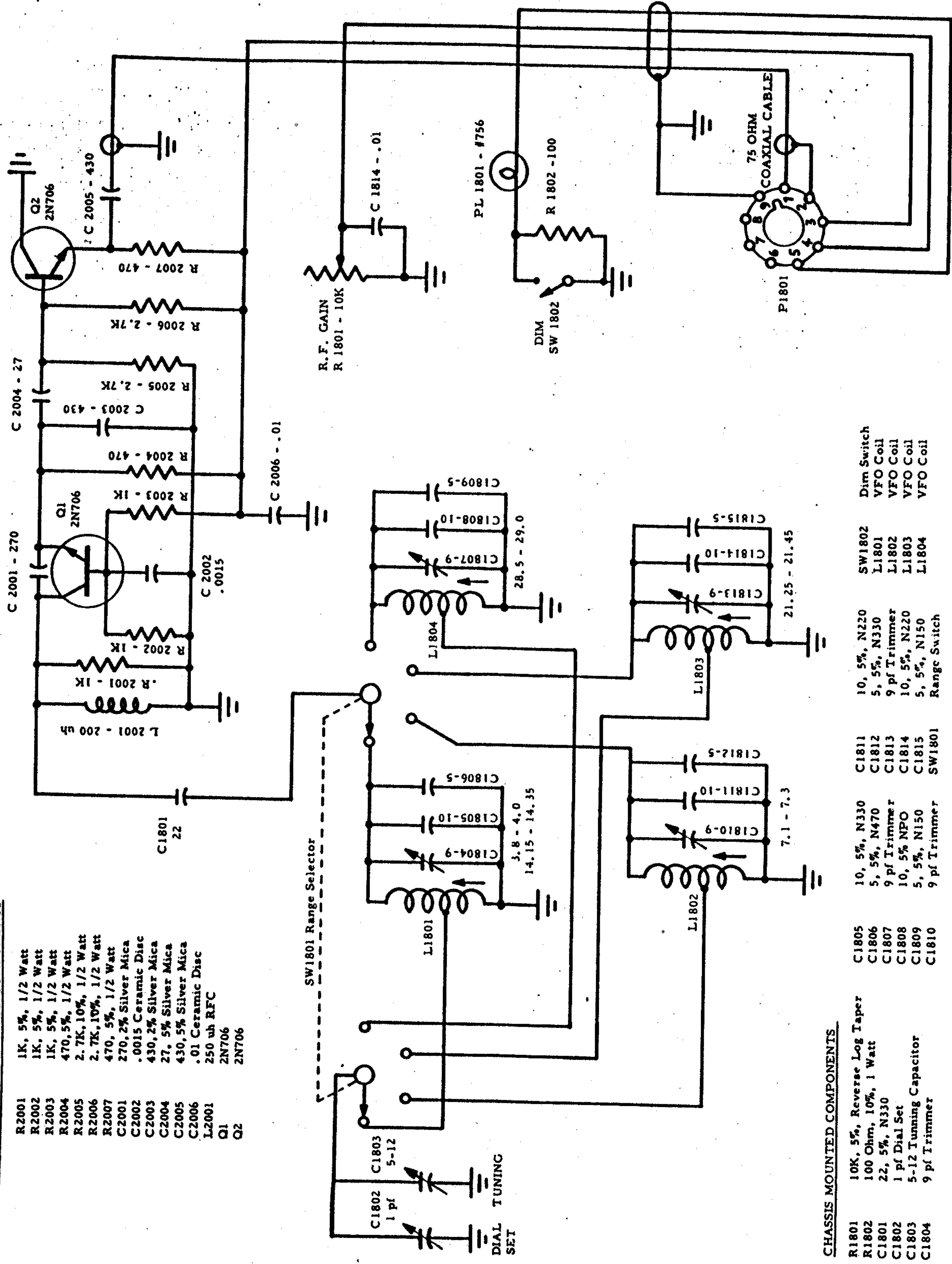
FOR MINOR FREQUENCY ADJUSTMENTS, which may be required after the initial aging period, simply remove the cabinet cover and very carefully adjust the trimmer capacitor marked for the specific range.

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.

406B FREQ RANGE	OSC. FREQ. (kc)	ADJUST COIL (Low end)	ADJUST CAP. (Hi end)
3.8-4.0	Low-High		
14.15-14.35	8973-9173	L1801	C1804
7.1-7.3	12,273-12,473	L1802	C1810
21.25-21.45	16,077-16,277	L1803	C1813
28.5-29.0	23,327-23.827	L1804	C1807

CIRCUIT BOARD MOUNTED COMPONENTS

- R2001 1K, 5%, 1/2 Watt
- R2002 1K, 5%, 1/2 Watt
- R2003 1K, 5%, 1/2 Watt
- R2004 470, 5%, 1/2 Watt
- R2005 2.7K, 10%, 1/2 Watt
- R2006 2.7K, 10%, 1/2 Watt
- R2007 470, 5%, 1/2 Watt
- C2001 270, 2% Silver Mica
- C2002 .0015 Ceramic Disc
- C2003 430, 2% Silver Mica
- C2004 27, 5% Silver Mica
- C2005 430, 5% Silver Mica
- C2006 .01 Ceramic Disc
- L2001 250 uh RFC
- Q1 2N706
- Q2 2N706



CHASSIS MOUNTED COMPONENTS

- R1801 10K, 5%, Reverse Log Taper
- R1802 100 Ohm, 10%, 1 Watt
- C1801 22, 5%, N330
- C1802 1 pf Dial Set
- C1803 5-12 Tuning Capacitor
- C1804 9 pf Trimmer
- C1805 10, 5%, N330
- C1806 5, 5%, N470
- C1807 9 pf Trimmer
- C1808 10, 5% NPO
- C1809 5, 5%, N150
- C1810 9 pf Trimmer
- C1811 10, 5%, N330
- C1812 5, 5%, N470
- C1813 9 pf Trimmer
- C1814 10, 5%, N220
- C1815 5, 5%, N150
- SW1801 Range Switch
- SW1802 Dim Switch
- L1801 VFO Coil
- L1802 VFO Coil
- L1803 VFO Coil
- L1804 VFO Coil

FIG.18 SCHEMATIC DIAGRAM, MODEL 406B FREQUENCY CONTROL UNIT