RECEIVER TUNING (cont.)

probably retune his dial to make you sound right. If you keep this up, you will gradually waltz one another across the band. If both of you are mistuning to an unnatural higher pitch, you will waltz across the band twice as fast. (And someone will no doubt be accused of frequency drift.)

2. Mistuning results in serious harmonic distortion on the voice, and should be quite noticeable to the average ear. Some will claim that if they don't know how the other person's voice actually sounds, they can't tune him in properly, but this is not true. With a little practice, it is fairly easy to tell. Some voices are relatively rich in harmonics, and are easier to tune in than a person with a "flat" voice. Also, a transmitter which is being operated properly with low distortion will be easier to tune in than one which is being overdriven and is generating excessive distortion. There is no mistaking when you have a station tuned right on the nose. It will sound just like "AM," so to speak. Mainly, avoid the habit of tuning so everyone sounds higher than normal pitch, or like Donald Duck. This is incorrect, unnecessary, and sounds terrible.

3. A vernier control for receive frequency, sometimes referred to as "incremental tuning," is not available on the Swan 700-CX. Such a device is not necessary if proper tuning habits are exercised.

4. Your Swan 700-CX will automatically transmit on exactly the same frequency as the one to which you are listening. There is no adjustment for making them the same, since by using the same oscillator for both send and receive, it happens automatically. If separation of receive and transmit frequency control is desired, the Model 508 VFO unit may be used.

TRANSMITTER

Power Rating

The SWAN 700-CX is capable of 400 watts, PEP input under steady state two-tone test conditions, when operated with any of the recommended power supplies. The peak envelope power, when voice modulated, is considerably greater, typically 700 watts, or more.

Recommended power supplies produce a no-load plate voltage of approximately 925 volts. Under TUNE conditions, or CW operation, this voltage will drop to approximately 700 volts. Under steady state two-tone modulation, the voltage will drop to approximately 750 volts. If the power amplifier idling current is 50 ma, and the two-tone current, just before flat-topping, is 400 ma, the peak two-tone current will be 600 ma. Under these conditions the PEP input will be 750 volts times 600 ma = 450 watts. Under voice modulation, because average power is considerably less, the power amplifier plate and screen voltages will be maintained higher, even during voice peaks, by the power supply filter capacitors. Peak plate current will therefore also be higher than with two-tone test conditions. Under typical operating conditions, peak plate current before flat-topping may on some bands be as high as 1 amp at over 800 volts, to result in an input of over 800 watts, PEP. Readings of cathode current will not reflect this over 800 watt power input, however, because of the damping in the cathode current meter. Cathode current readings under normal voice input should not exceed approximately 225 ma on occasional peaks.

POWER AMPLIFIER PLATE DISSIPATION

There is often a misunderstanding about the plate dissipation of tubes operated as AB1 amplifiers under voice modulation. In the Swan 700-CX, while in the transmit position, and with no modulation, the plate voltage will be 890 volts, the plate current 50 ma, and the power input will be at 45 watts.

Average voice power is from 10 to 20 db below peak voice power. Normally some peak clipping in the power amplifier can be tolerated, and a peak-to-average ratio of only 6 db may sometimes occur. Under such conditions, the average power input will be 125 watts, and average plate current will be 156 ma. With power amplifier efficiency of 65 percent, plate dissipation will be 44 watts, or 22 watts per tube. The 8950 is rated at 40 watts, continuous duty cycle. Thus it can be seen that under normal operating conditions, the power amplifier tubes in the Swan 700-CX are not being driven very hard. Note, however, that proper modulation level must be maintained by correct setting of Mic. Gain, and that the length of time in TUNE position should be limited to not more than 30 sec. at a time.

TRANSMITTER TUNNING

Special Notes: Read carefully. Be sure that you understand and remember these notes when turning the transmitter.

1. The most important detail to keep in mind when tuning the transmitter portion of your Swan transceiver is that the P.A. PLATE *must be resonated as quickly* as possible! The P.A. tubes are dissipating all the power input when they are not in resonance, and can be per-