DRAKE T-4XC Troubleshooting

First Steps

1. Exercise all switches. A drop or two of DeOxit on each switch tag. A drop of DeOxit in each tube socket pin (don't put too much!) and insert and remove each tube a couple of times. A drop on relay contacts, then soak off excess with Q-tip. DO NOT use spray contact cleaner of any kind!!

2. Go through and loosen all mounting hardware 1/4 turn and retighten snugly. Careful with self-tapping screws not to overtighten. (Also known as stripped!)

3. Check final cathode resistors for accuracy and match.

4. Replace plate current meter shunt resistor with correct value (2.7 ohm in early, 3.3 ohm in late) and 1 Watt wirewound or carbon film. 2% if you can find them, or check with DMM. Then adjust meter series cal resistor for 100 mA on meter, confirmed with DMM. Easiest to measure voltage across shunt resistor (270 mV for 2.7 ohm, 330 mV for 3.3 ohm) to set 100 mA point on meter. Use measured value of resistor for calculations.

Typical Signal Levels

Tuned up on 40M, PTO at 100. Tune position, Min GAIN.

Signal Levels:

Carrier Oscillator (Arm of Carr Bal Pot)
    4.2V p-p

PTO (Coax at Switch)
    2V p-p Sine Wave

Band Oscillator (Collector of Q-7)
    1.5V p-p

V-8 Plate (Pin 7)
    3V p-p Complex Waveform (Xtal Osc & PTO)

T-2 Secondary (GAIN just below saturation)
    Tune 3V p-p DSB
    CW 2V p-p Carrier

T-3 Secondary (Tune)
    Top (C27) 2 V p-p Carrier Oscillator
    Bottom (R32) 3.3V p-p Premixer Output

V-4 Grid (Pin 2) (Tune)
    6V p-p (GAIN just below saturation)

V-5/V-6 Grids (Detunes to ~half power w/10X Probe)
    130V p-p (Tune, GAIN just below saturation)

Sidetone (V-7 Pin 5) [CW mode, Full Output]
    220V p-p Audio