

## IC-765: Installing the Inrad Full QSK Keying Mod

In the VOX mode, the keying in the IC-765 is close to ideal. There is a 9 millisecond delay from key down to RF output and a 10 millisecond delay from key up to RF off. The rise and fall times of the RF envelope are about 2 milliseconds. However, in the Full Break-In mode, the trailing edge delay from key up to RF off is shortened to 2 milliseconds. This is a 7 millisecond error and results in the keying sounding "choppy" at higher speeds. It also reduces the average power transmitted. Additionally, the side tone is shorter than the actual transmitted character length.

Both of these problems can be largely corrected by the modifications described below. When the IC-765 is switched to Full Break-In the VOX delay capacitor is switched out. By adding a much smaller capacitor in the Break-In mode, the trailing edges of the keyed characters are not clipped short. The price that is paid for this keying improvement is that the "come alive" time for the receiver is increased slightly between keyed characters. The value chosen here is a compromise between perfect keying and too long of a delay in the "come alive" time.

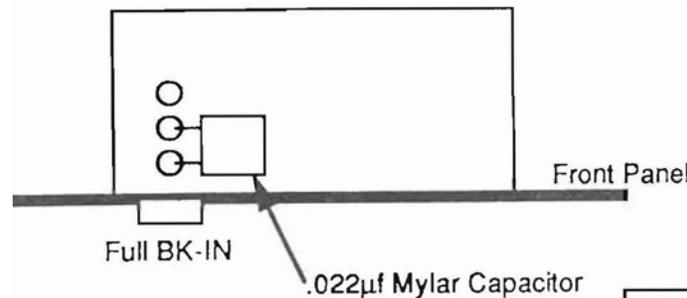
In the test radio the keying error was reduced to 3 milliseconds and the come alive time increased from 20 milliseconds to 24 milliseconds. (In actual operating the increase was not noticeable.)

The second modification reduces the delay from key down to sidetone output from 10 to 3 milliseconds, and increases the delay from key up to side tone off from 2 to 3 milliseconds. This improves the sidetone sound significantly.

### Parts List

.022  $\mu$ F mylar capacitor  
51k ohm  $\frac{1}{4}$  watt resistor

1. To increase the keying weight in the Full Break-In mode, add a .022  $\mu\text{f}$  capacitor as shown. Turn the radio upside down and loosen the front panel to provide access to the board that contains the Full BK-IN switch. Solder the capacitor to the two switch terminals closest to the front panel.



2. To improve the sidetone, remove the bottom cover and locate the area of detail shown on the Main Unit diagram. Solder a 51 k 1/4 watt resistor between the left ends of the components labeled 15 and 81. Use an iron with a small tip.

