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COUNTER INSTALLATION

REMOVAL OF OLD COUNTER

1. Remove the Signal/One from its cabinet. Set the radio top shield up and remove the four screws and washers holding the shield which encloses the counter board. Remove the shield.

2. Leaving the counter board intact, remove all wire connections from the counter board by pulling the AMP solderless connectors with pliers. Do Not pull on the wires.

3. Remove the four screws holding the counter board and remove the counter board.

INSTALLATION OF NEW COUNTER BOARD

1. Remove purple 300V line (wire #158) from back of counter panel and seal off its end so that it will not short out to any part of the interior. Replace this wire from where it was connected to the counter feed thru header with green wire supplied to the TR line (green wire #386) on the AGC board.

2. As above, remove the blue -15V line (wire #50) from the back of the counter and seal its exposed end. Replace it from where it was connected to the counter feed thru header with the gray wire supplied to the RT line (gray wire #484) on the AGC board.

3. Cut off the solderless AMP connector from wire #398 (on the inside of the counter) and remove 1/4" insulation from it. Solder it to the 5V lead (wire #395) at the feed thru capacitor inside the counter section.

3a. Unsolder all the remaining solderless AMP connectors from the counter section. Now solder each new Berg ~~feed thru~~ JUMPER with the proper number wire at each feed thru in the same order the old AMP wires were removed. INSTALL 2 FERITE BEADS ON EACH LEAD CLOSEST TO FEED THRU BLOCK.

4. Place the counter in position and screw it down. Follow the wiring diagram as shown for all internal connections.

5. KEYER CONNECTIONS: Remove wire 160 and 161 from the keyer pot. Remove the pot, and replace it with the new one provided. Follow the wiring as shown in the diagram.

COUNTER INSTALLATION (cont'd)

PTO MODIFICATIONS

6. Install a 100Ω resistor in series with each -15v Blue wire at the back of both the "A" and "B" PTO's.

7. Installation and modification is now complete. Carefully recheck all steps. Look for any wires which may have been accidently pulled off and replace them. If you have dropped any hardware into the radio, be certain to find and remove them.

8. Replace the counter creen and Signal/One cabinet.

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COUNTER CIRCUIT EXPLANATION

The 3.1 MHz to 4.1 MHz signal from one of the PTO's is selected in IC 10, having already been squared up by Q1 or Q2. The PTO frequency is counted dueing a 50 ms (1/20th second) period. The PTO count is repeated 24 times per second (60 ms. period). The PTO counter is controlled by a number of signals called transfer, clear, and gate pulses. These signals and their complements are generated by a division of the 100 kc input to the counter board.

The control pulses do just what their names imply. Just prior to the start of a count the clear pulse has reset the PTO counter to all zeros except for IC 12 which is reset to a 9. This is designed to compensate for the fact that the PTO input frequencies tune 3.1 MHz to 4.1 MHz while the counter reads between integer MHz. The gate pulse allows the count to occur by enabling gate D of IC 6. During the count the LED's are being driven by the decodes/drivers and latches which "remember" the results of the previous count. After the count has finished, the transfer pulse moves the results of the new count into the memory and the process begins again.

Overrange indication is accomplished by the use of an addition ± 2 count at the end of the PTO counter string. The F-F output blanks the first two (MHz) digits of the display and lights the left-hand decimal point of the third (100kc) digit.

Comparator IC 4A is used to inhibit transfer pulses immediately after a transmit-receive (TR) receive-transmit (RT) transition. This effect lasts for a few tenths of a second after a TR transition. However, the effect is much shorter for an RT transition due to the influence of Q5. Thus, the readout tends to lock in transmit during rapid CW operation.

KEYER EXPLANATION

IC4C is a sawtooth oscillator which is keyed by nor gate output pin 1 of IC6. The sawtooth waveform is fed into comparator IC4D which puts out a rectangular waveform of varying duty cycle depending on the front panel weighting control. The comparator output feeds the input of a nor gate, pin 6 of IC6, which adds weighting to the keyer output. The comparator output also clocks F-F IC1A. The output of FF IC1A has four distinct uses:

1. Locks keyer on during dot or dash via pin 12 of EC2.
2. Clocks FF IC1B through a pulse shaper.
3. Clocks FF IC3B also through the pulse shaper.
4. Helps control keyer output.

KEYER EXPLANATION (cont'd.)

The output of FFICIB is also multi-purposed. It helps generate the keyer output. It helps lock the keyer on during a dash through pin 4 of IC2, and finally, it can prevent a clock pulse from reaching F-F IC3B. This occurs when part way through a dash if the front panel dot memory switch is in the full sensitivity position. If that clock pulse was stopped, the dot memory, if any, would be wiped out part way through a dash, hence partial sensitivity memory. FF IC3A is the dot memory F-F and is enabled or disabled by FF IC3B. If the dot memory F-F is disabled, dot inputs may still pass through it but they will not be remembered. The output of the dot memory FF drives the sawtooth oscillator and helps to control the activity of FF's ICIB and IC3B.

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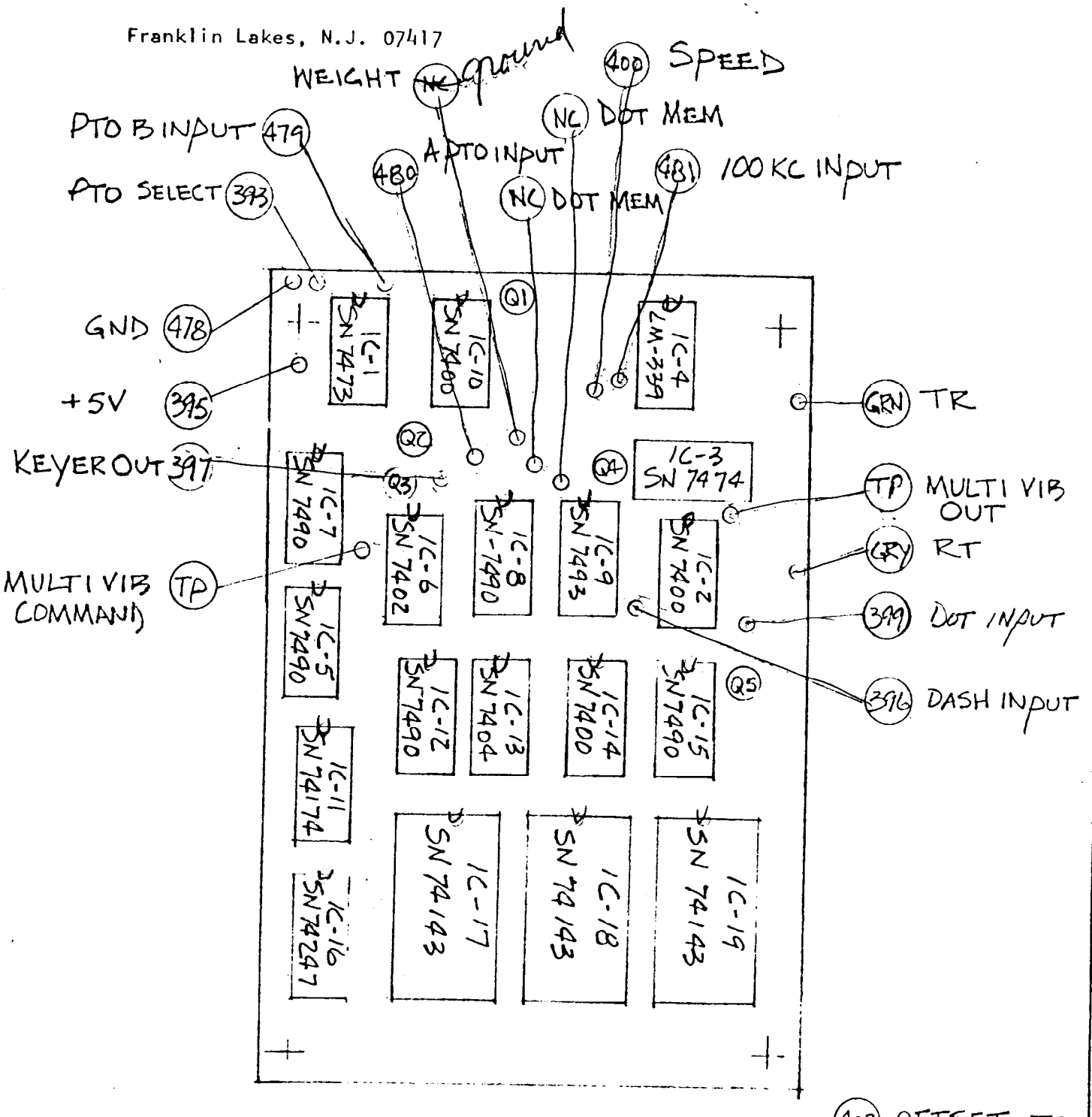

SIGNAL ONE COUNTER KEYER
CX-11/7/7A/7B PART # 61-50028-002