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Ranger (RCI) RCI-2900 Frequency Modification and Tips

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RCI 2900

Two versions of this unit are known to exist. The only difference between these two versions is in the 11 meter modification points. They are in the same location on both versions, but modify different. One version has plugs on pins that you simply unplug to modify, but the other version has pins soldered together and covered with a epoxy type material.

11 METER MODIFICATION FOR THE VERSION WITH PLUGS ON THE PINS THAT MUST BE MODIFIED

1. Remove covers.
2. Remove 4 screws from face plate, allowing face plate and PCB to be moved forward for access to PCB.
3. Locate OP1 plug connector and remove.
4. You now have 26.000 to 29.999 mhz. frequency range operating on VFO. You have all CB frequencies but no channel number 1-40 readout.
5. Tune L17 to obtain all frequencies down to 26.000mhz. L17 is in large can with four screws in top. Remove screws and remove cover to get to L17.(NOTE- Screws may not come out easy, also some cans are soldered in addition to screws. Will have to unsolder to remove cover.) If this seems like too much work: turn unit over on PC side and solder the whole can.
6. Tune L18, L50, L48, L46, and L38 for max. forward swing on peak reading watt meter, balance between highest and lowest frequencies. Power will probably drop off some on extreme ends of frequency range.
7. Adjust VR13 for 10-12 watts key on high power, low power will be 4-5 watts key.
8. Adjust Vr14 for max. forward swing on AM or for 100% modulation on modulation meter.
9. Adjust VR12 on SSB for max. power.
10. TR33 can be removed for more modulation, but disables VR12 SSB ALC power control.

NORMAL CB MODIFICATION WITH CHANNEL NUMBER 1-40 READOUT

1. Locate OP2 plug.
2. Move OP2 plug from pins P2 & P3 to pins P1 & P2.
3. To operate CB band: Press MAN key to manual mode. Press HI/LO key once. Rotate frequency selector to select the desired channel. Press HI/LO key again and the channel frequency will appear in LCD display. (Continued on next page)

NORMAL CB BAND MODIFICATION WITH CHANNEL NUMBER 1-40 READOUT CONTINUED

In normal CB mode the HI/LO power switch is disabled and VFO does not operate as a VFO, but operates as a channel selector. This modification really needs to be wired to a SPDT switched in & out of circuit.

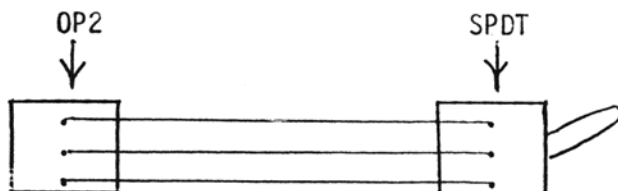
11 METER MODIFICATION FOR VERSION WITH SOLDERED PINS & EPOXY COVERING ON PINS TO BE MODIFIED

1. Remove 4 screws from face plate allowing face plate & PCB to be moved forward for access
2. Locate OP1.
3. Remove epoxy material. Epoxy can be removed by picking off with small screwdriver or knife.
4. Unsolder pins P1 & P2.
5. You now have 26.000 to 29.999 mhz. frequency range operating on the VFO. You will have all CB frequencies, but no channel 1-40 readout.
6. Tune L17 to obtain all frequencies down to 26.000 mhz. L17 is in large can with 4 screws in top. Remove screws and cover to get to L17. Should come off easier than other version.
7. Tune unit same as other version.

NORMAL CB BAND MODIFICATION WITH CHANNEL NUMBER 1-40 READOUT FOR VERSION WITH SOLDERED PINS AND EPOXY COVERING

1. Locate OP2.
2. Remove epoxy material.
3. Unsolder pins P2 & P3. (If soldered, some units pins are not soldered together.)
4. Solder P1 & P2 together.
5. Operates same as other version and other information is the same.

I SUGGEST DOING THE OP1 MOD. ONLY, BECAUSE YOU HAVE ALL FREQUENCIES ON THE VFO AND DOES NOT CAUSE THE VFO AND HI/LO POWER NOT TO OPERATE ON NORMAL CB FREQUENCIES. BUT IF YOU HAVE TO HAVE THE CB CHANNEL NUMBER READOUT, WIRE OP2 WITH SPDT SWITCH AS SHOWN BELOW.



SWITCHES OP2 IN & OUT OF CIRCUIT

RCI 2900 INFO CONTINUED

THE OP2 SPDT SWITCH MODIFICATION WILL ALLOW NORMAL CB CHANNEL NUMBER AND VFO OPERATION WITHOUT LOSS OF HI/LO POWER FUNCTION. WITH CB BAND SWITCHED IN CIRCUIT VFO & HI/LO POWER STILL DOES NOT OPERATE, BUT ALLOWS NORMAL CB BAND TO BE SWITCHED OFF, SO THAT ALL FREQUENCIES WILL WORK ON VFO & HI/LO POWER WILL FUNCTION. THAT WAY WILL HAVE THE BEST OF BOTH MODIFICATIONS.

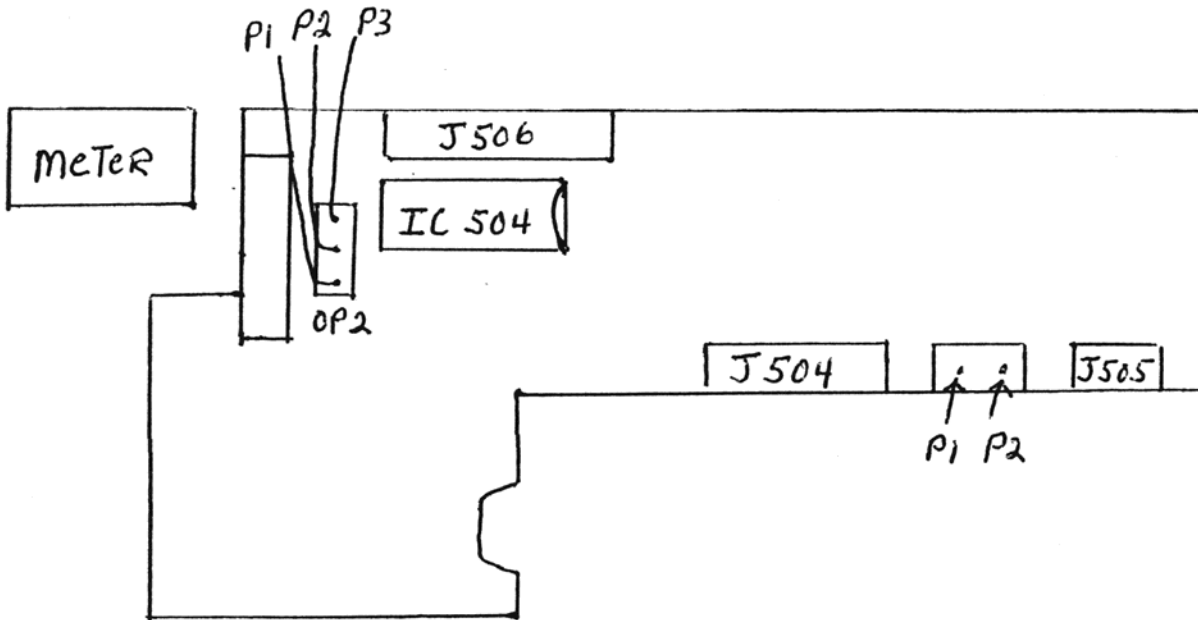
I also recommend removing the thick white insulators from the driver and both finals & replace with thin mica insulators for better heat transfer to heat sink. Will make transistors live longer. Cheap insurance.

MIKE WIRING

PIN

- 1-Ground
- 2-Audio
- 3-Tx
- 4-Rx (Not really needed)
- 5-N/C
- 6-N/C

PCB BEHIND FACE PLATE



VCO TUNING INSTRUCTIONS FOR RCI-2900.

TOOLS NEEDED

Plastic tuning tool
High impedance volt meter
needle nose pliers
Soldering iron

- 1) Power up radio and set frequency to 28.0000 Mhz.
- 2) Turn "MIC" control fully clockwise, out of reset mode.
- 3) Set power to high by pushing H/L Button, red light will turn on.
- 4) Set to "AM".
- 5) Turn "OFF" power.
- 6) Remove top cover, 5 screws.
- 7) With front controls toward you, tilt the rear of the radio up so you can see down inside the radio looking through the open space between the green circuit board and the front black plastic frame.

Looking down into the radio on the left side you will see "3" connectors attached to the back of the front panel.

FROM LEFT TO RIGHT:

- (1) 3 wire butterscotch connector.
 - (1) 2 pin (covered with epoxy)
 - (1) 5 wire butterscotch connector.
- 8) Remove epoxy carefully, exposing the pins, remove the solder which connects the pins together.
 - 9) Holding the radio as in step 7, look down into the lower right corner, even with the front edge of the green circuit board you will see "3" connectors and the back of the panel meter.
 - (1) 3 wire butterscotch connector.
 - (1) 9 wire butterscotch connector.
 - (1) 3 pin (covered with epoxy)
 - 10) Remove epoxy and carefully remove solder from pins 1&2. Resolder pins 2&3, leaving pin (1) open.
 - 11) Replace the top cover, 5 screws.
 - 12) Turn radio over and remove bottom cover, 5 screws.
 - 13) Lay the radio down flat with the front controls toward you, looking at the component side of the circuit board. Midway along the left side of the circuit board you will see IC-10. It will be either a 14 pin or 16 pin chip with the numbers S042P on it. Looking between IC-10 and the aluminum chassis you will see 2 exposed pins coming up from the circuit board. You will connect the (+) positive lead from your volt meter to the pin closest to the aluminum chassis. The (-) negative lead may be connected to any of the metal cans on the circuit board.

Approximately 2 inches below IC-10 you will see a large "can" about 1"x1½" with 4 screws and 2 holes in the top. This is where you will adjust the voltage to the VCO.

14) Remove the 4 screws from the top and remove the cover.

There is only 1 adjustable coil inside the enclosure.

15) Power up the radio. Connect the voltmeter as described earlier.

You may want to take a voltage reading at this time in case you want to retune the radio to it's original state, remembering to change the position of the one jumper and replacing the other.

You may need to heat up the wax around the coil so the slug will turn. Only heat the wax by applying heat to the outside of the can. DO NOT STICK A SOLDERING IRON TIP DOWN INTO THE SMALL CAN.

16) Adjust the small coil to read 2 volts. EXACTLY.

After adjusting make sure the wax hardens again so the slug doesn't move.

17) Replace the lid over the small coil, 4 screws, making sure the 2 holes are towards the front of the radio. Replace the radio cover, 5 screws.

This completes the conversion procedure.

- A) Frequencies between 27.4500-27.9900 will not be available with this modification.
- B) To change between 10 meters and 11 meters just press the H/L button.
- C) Power will always be on high with this modification.
- D) Normal 10 meter operation will not be affected by this modification.

RANGER AMATEUR 10 METER UNIT
MODEL RCI-2900

We found a good "FIX" for the amateur unit RCI-2900 "VCO" lock speed and stability.

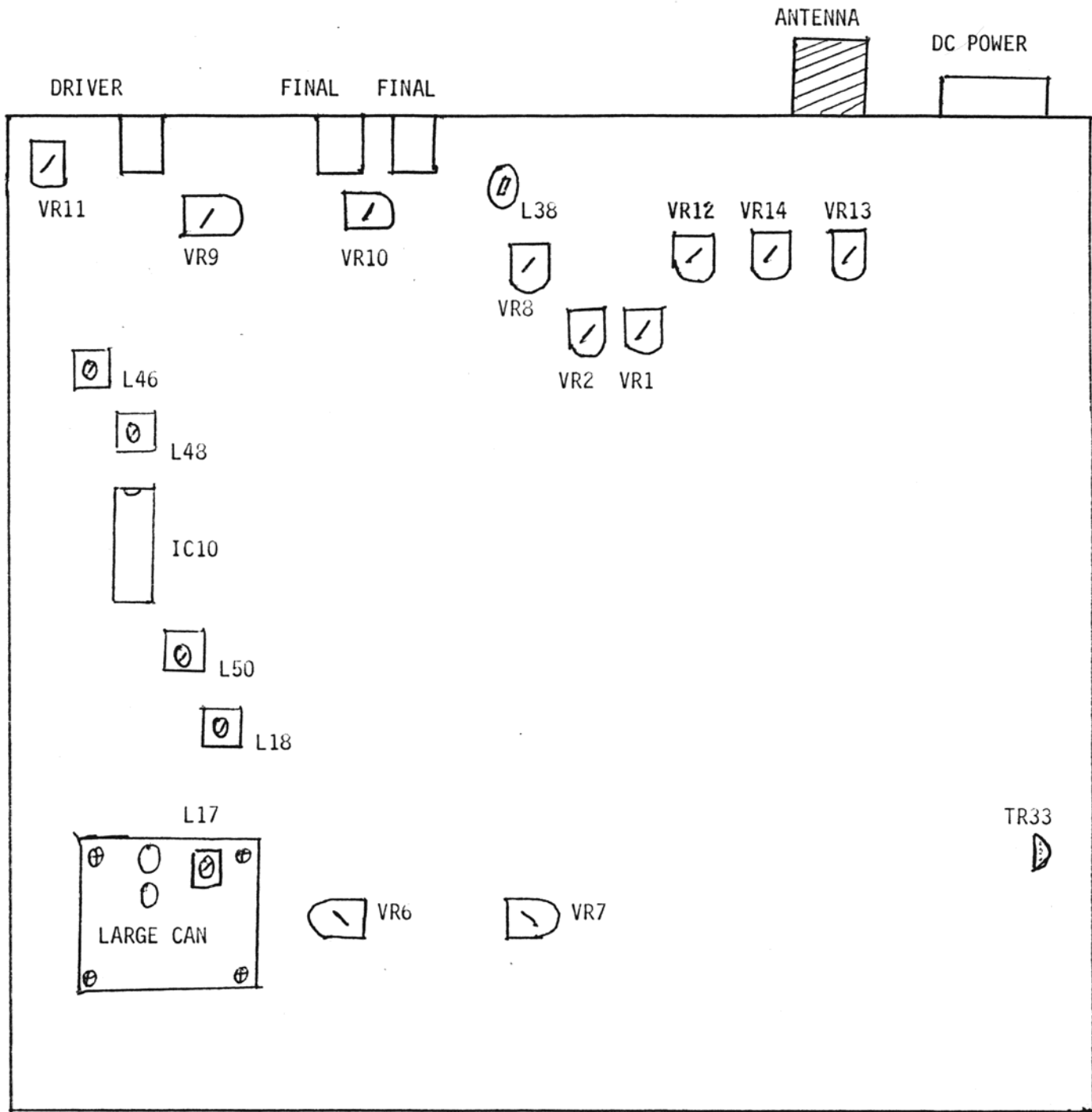
- 1 - Change resistor R124 connected to TR25 gate from 47K to 8.2K.
- 2 - Change capacitor C136 connected to IC7 Pin 13, from 0.047 MFD to 0.0047 MFD.
- 3 - Change capacitor C138 connected to IC7 pin 10, from 0.047 MFD to 0.0047 MFD.
- 4 - Add a 10MFD 6 VDC tantalum capacitor from TR25 drain to ground. (Junction of TR25 drain and R128)
- 5 - Remove R131 (560 OHMS). Replace with a 4.7K 1/4 wt. resistor.
- 6 - Remove C85 (.022uf). Replace with a .1uf 50v mylar capacitor.
- 7 - Tune the unit to 28.0000MHz and adjust L17 to obtain 0.8V at test point TP7.
- 8 - Change capacitor C139 from 10 MFD/16V to 1 MFD/16V.

There is also a fix for the receiver clipping and distorting during SSB reception.

- 1 - Change resistor R47 from 10 OHM to 150 OHM.
- 2 - Add a 10 uf 16VDC electrolytic capacitor from junction of R74 and R301 to ground.

Some units will not come back to receive after the power is turned off, and then back on. The fix is as follows:

- 1 - Locate IC7 (CX7925P) PLL chip near front of radio.
- 2 - Disconnect R201 from IC12 voltage source (This resistor is connected to pin 12 of IC7).
- 3 - Re-connect free end of R201 to +5 volts coming from IC13 (Microprocessor voltage source).



VR1- RECEIVE METER
 VR2- SQUELCH RANGE
 VR6- FM DEVIATION
 VR7- CARRIER BALANCE
 VR8- TRANSMIT METER
 VR9- FINAL BIAS
 VR10- FINAL BIAS
 VR11- DRIVER BIAS
 VR12- ALC (SSB POWER)

VR13-AM POWER
 VR14-AMC

TR33 is the AMC limiter. Can be removed for more modulation, but it does disable the ALC. L17 is the VCO coil. L18, L50, L48, L46, & L38 Should be tuned for max. forward swing on peak reading meter.