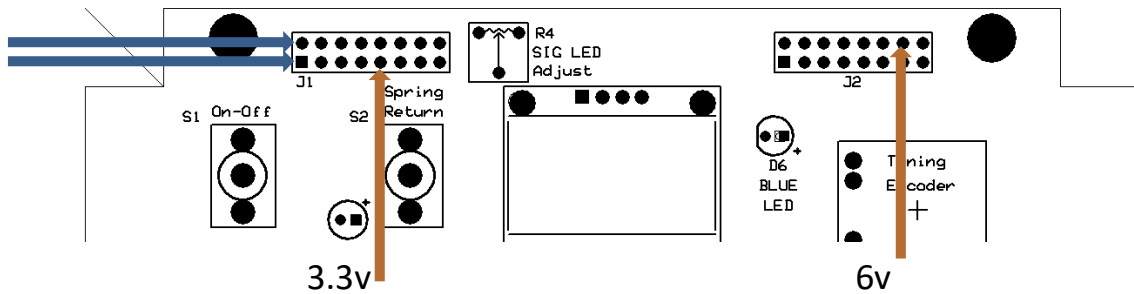


TR-35 Preliminary Checks, Tests and Final Assembly

Before commencing with testing, you will need to understand the operating instructions for your TR-35 transceiver. The rotary controls and switches are pretty much self-explanatory. There are no hidden back menus, but the band switch does have a second function. While a quick upward flip and release of this switch changes operation from one band to another (40 through 17-meters consecutively), if the switch is flipped up and held for a few seconds, the current frequency and receiver mode will be stored in a semi-permanent memory. There is a separate memory for each band. Recall of this memory requires two quick successive upward clicks. The other part of this switch controls the RIT function. To engage the RIT function, a quick downward push and release of the toggle is needed. The orange RIT warning LED will come on, and the display will read out the RIT offset. Another quick downward toggle will dis-engage the RIT function. A press of the Aux switch will engage a dial lock function. Another press will dis-engage the dial lock. Tuning is inhibited with the dial lock on. The knob to the right of the display is the tuning encoder. The frequency will change in 10 Hz, 100 Hz or 1 kHz steps. The tuning step resolution is selected by a momentary switch attached to the tuning control. Short pushes on the tuning knob will alternate between 10 and 100 Hz steps. A long press will enable 1 kHz tuning steps. The frequency readout on the display will show the tuning resolution with an underline bar under the digit selected. That's pretty much it.

There are a few ohmmeter checks that should be made. The 3.3-volt and the 6-volt power supplies as well as the 12-volt rail should be checked for shorts. Measurement points for these supplies are available on the top side of the upper board. See the diagram. The resistance to ground on any of these points should be more than 1000 ohms.



Note: The blue arrows points to the 12V pins and the orange arrows point to the 3.3V and 6V pins.

If all is well, the receiver will be tested first. Connect a speaker or headphone to the Phone jack, and a suitable antenna to BNC antenna connector. Do not connect a key or paddles yet. Turn the TX Power pot fully counterclockwise. Set the RF gain pot fully clockwise, and the volume control to about $\frac{1}{4}$ up. Connect a 10-to-12-volt power source able to supply up to 1.2 amps to the DC power input connector. Turn on the power switch and observe the OLED display. It should come on right away, and after a few seconds the screen will show 40 through 17-meter frequencies. The frequency should change as the tuning encoder is rotated, and you should hear signals or at least some band noise. Verify that the band switch allows 40 through 17-meter operation. Verify that the RIT function is operational. Check the RF Gain and Volume controls. Once satisfied that the receiver is in working order, disconnect the antenna and connect a 10-watt 50-ohm dummy load and a wattmeter to the antenna BNC connector. The Blue LED Signal LED adjustment control, R4 on the underside of the upper board, should be adjusted for a faint glow with no signal present. Before attempting to transmit, you must first adjust the Final RF amplifier FET bias control R40 on the lower board. This will require that you can measure the DC current from the power supply with a resolution of a few milliamps. A Digital Multi-meter connected as an ammeter in series with the power supply is perfect. First, rotate the panel RF Power control and the volume control fully counterclockwise. Also adjust the bias control R40 all the way counterclockwise as viewed from the rear of the transceiver. Select the 40-meter band. Observe the current drain in receive mode. It should be less

than 100 milliamps. Connect a key to the Key jack. With a dummy load connected to the BNC jack, close the key, and observe the power supply current. It should increase by about 10 milliamps or so. Note this reading. With the key closed, slowly advance the bias pot R40 with a small screwdriver while observing the power supply current. The object is to adjust the bias control until the supply current just starts to increase. Set the control for an additional current of 6 to 8 milliamps beyond what was previously noted. Do not set it higher as this does not appreciably increase the power output. If set too high, it can have a profound negative effect on the efficiency and heat stability of the final amplifier FET. With the bias pot set, disconnect the in-line current meter. You may now slowly increase the panel RF Power adjust control and observe the power output on the wattmeter, and the sidetone should be audible as you advance the volume control. You should see about 5 watts or a little more with the RF Power pot all the way up, depending on the supply voltage. RF power output on 17 meters will typically be a little less than on the other bands. The side-tone level control R31 should be adjusted to set the level to your liking. Note that the sidetone level will change some as you adjust the power level. To set the battery warning level pot R46, a power source with an adjustable voltage level will be required. Set the power supply voltage to the point where you wish the red warning LED to blink, and then adjust the pot until the LED just starts to blink. This level can be set from about 9.5 volts to about 11 volts. Turning the pot all the way clockwise as viewed from the rear of the TR-35 will set the level to its lowest. The final adjustment centers the audio bandpass filter frequency to 700Hz. To adjust pot R50 mounted on the underside of the upper board, set the receiver mode to 40-meter narrow band CW and set the transmitter power level about midway. Key the transmitter and adjust the pot for maximum audio loudness of the sidetone. An oscilloscope or audio dB meter connected to the speaker output would make this adjustment more precise. The final setting of this pot should be near the center of its rotation range. Note that this bandpass filter is disabled in wide band CW and SSB receiver modes. Once the adjustments are made, the case can be

assembled. Be sure that the lower board is attached to the board spacers with four 3mm screws. Start by placing the board set into the lower-case half. Slip the BNC connector through the large hole in the right side of the case bottom half. The board set should fit flat with a minimal amount of persuasion. Now place the upper-case half down over the panel shafts. If it seems that the fit must be forced, investigate the reason. With the top properly fitted to the bottom, install the four original black case screws. Place the three nuts on the switches and place the nut and washer on the encoder shaft. Slip the red vinyl cap onto the power switch toggle, and the white caps onto the Band/RIT and RCVR Mode/AUX switch. Be careful when installing the panel LED lenses. It requires some care to prevent damage to the lenses while installing them from the front side of the panel. Place the red lens for the Low Batt warning, the orange for the RIT warning, and the blue for the SIG indicator. Before installing the knobs, back out the setscrews and rotate a ¼" drill bit by hand into the shaft holes to remove any burs, and then replace the setscrews. When installing the knobs, make sure that they do not rub and mark up the pretty panel. Remember that the tuning knob must be installed far enough above the panel to allow for a slight downward movement with a push on the knob for setting the tuning resolution.