

# SR-160/500

## ANTENNA AND DRIVER GRID AND PLATE ALIGNMENT.

The arrangement of the antenna and driver coils is a bit unusual. In that the 80 meter coils are in the circuit on all three bands. This requires the 80 meter band to be aligned first. Next the driver grid coils are both used in receive as well as transmit modes. Also the DRIVER TUNE control is actually a PRESELECTOR tune adjustment that effects both receive and transmit functions. Although this process seems lengthy it can be accomplished in 10 minutes or less on a good rig with no faults. Read through the procedure and follow along with the schematic before you start.

This process serves me well but is by no means the only way to approach the interaction difficulties. By going through this process and developing an understanding of what and why it does what it does you may develop your own process.

To properly adjust L1, L5, L8 (80 METERS) and L2, L6, L9 (40 METERS) and L3, L7, L10 (20 METERS) you should use the following guidelines.

- Preset the DRIVER TUNE to the center of its rotation on all 3 bands. This setting should **not** be changed through the entire tuning procedure.
- Set the VFO to the center of the band you are tuning and do not change it until you have completed the tuning and are ready to proceed to the next band. (That is if tuning the 80 meter band for General class operation the VFO should be set to 3.9 MHz.)
- Set the RIT to OFF and the DIAL CAL to the center of its rotation.
- Tune the receiver and the transmitter on each band before going to the next band.
- When tuning the receiver peak the S-meter using the RF generator frequency control do not change the VFO setting.
- When tuning the driver coils in transmit mode keep the CARRIER level set for just under 40 watts for the SR-160 and just under 90 watts for the SR-500. Remember to keep the transmitter duty cycle short.

**NOTE:** On 80 meters L5 interacts with both receive and transmit.

On 40 meters L6 interacts with both receive and transmit.

On 20 meters L7 interacts with both receive and transmit.

Here is where the "ANTENNA SEPARATE" switch is handy. Connect the signal generator to J6 the REC ONLY jack. Connect the wattmeter/load to J5 the common jack. Push the switch to the separate position. Now you will not have to switch cables or risk transmitting into your signal generator.

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Power up in receive only mode, go get a cup of coffee or a glass of milk and let it warm up for about 20 minutes (assuming you already have its outer case off). Preset all the conditions in the guidelines above. Set to 80 meter band. Set VFO to 3.900 MHz. Tune the signal generator for about S-1 on the meter. Adjust L1 and L2 for max S meter deflection. Keep adjusting the output of the signal generator to keep the S meter around S-1.

Now with the CARRIER control at minimum switch to CW-TUNE and advance the drive to achieve the above recommended power out. Tune L8 first for max output and keep reducing the drive as required. Next carefully adjust L5 for max power. If it is not very close to peak where the receiver peak occurred then IT IS TIME FOR SOME INDUCTIVE REASONING. Tune L1 and L5 for max receive. Then switch to CW-TUNE, if you can saturate the transmitter before the CARRIER control is at max then go with that setting. If not turn the DRIVER TUNE ABOUT 20° counter clockwise and do the whole procedure again. Then try 20° clockwise from center of the DRIVER TUNE control and repeat the process. If you are unable to find a combination where the transmitter and receiver will work together then you have a failed component most likely in the S1C tank circuit, V13 is loading the circuit in receive mode or you have a problem in V14.

If all is well on 80 meters switch to 40 meters, set the VFO to 7.230 MHz and check all of the guideline settings. Using L2, L6, and L9 repeat the same process as used on the 80 meter band. Also apply the same INDUCTIVE REASONING. As noted earlier the 80 meter L5 and L8 do interact with the 40 and 20 meter bands. So, once you are satisfied with the adjustments on 40 meters key the transmitter on 40 and slightly move L5 and L8 and check for effect in the power output. Here again you need to evaluate the extent of interaction with the effect on the spec operation. I have not found any process to isolate the failed component other than general testing of capacitors and coils. If the interaction of L5 and L8 are minimal on 40 meters there is no need to check it on 20 meters.

Once all is well on 80 and 40 meters then adjust the signal generator and VFO for 14.260, set the band to 20 meters and do the whole thing again adjusting L3 and L7 in receive mode and L7 and L10 in transmit. The same thought process is used for the interaction of L7 in transmit and receive modes.

Regards, Walt WDØGOF