

S- Tuner

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Credit Line: http://www.cqham.ru/ant71_34.htm

S- Tuner provides matching of asymmetrical output of a transceiver with symmetrical feeder line. Symmetrical feeder line (as usual it is two- wire ladder line or two- wire line with plastic insulation) used to feed symmetrical dipole antennas.

Lots additional stuff on S- Tuner it is possible to find from the site PA0FRI <http://pa0fri.home.xs4all.nl/>

Figure 1 shows schematic of the S-Tuner.

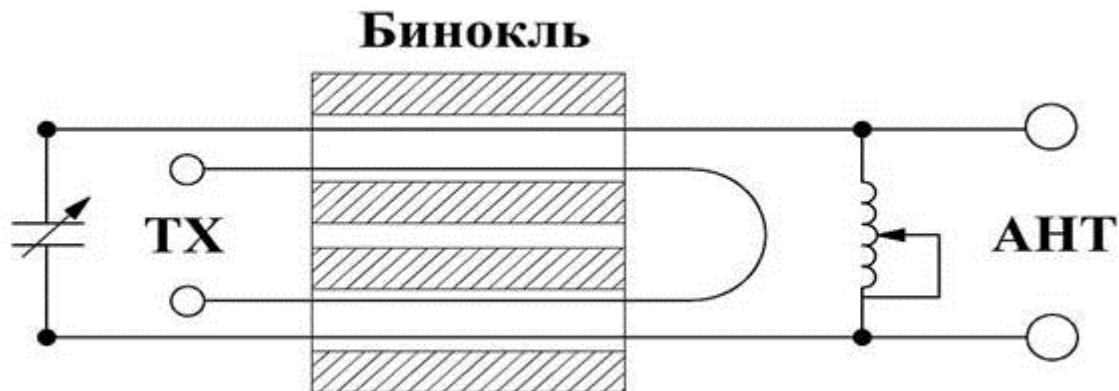


Figure 1 Schematic of the S- Tuner

Binocular transformer (made on ferrite tubes used on the monitor cable) forms symmetrical output. Variable capacitor and tap inductor provide matching two- wire line feeder with transmitter. **Figure 2** shows design of the S- Tuner.

Variable capacitor used at the tuner has capacity 12x520- pF. At the lower HF-Bands it may be need to connect to bridge to the variable capacitor a fixed capacitor on 500- pF or 1000- pF. It is possible to use a two or four section variable capacitor from an old tube receiver. At the case rotors should be connected to binocular transformer stator should be connected to the "ground." Such capacitor works fine up to 100- Wtts.

At the S-Tuner it is used a tap- inductor on ferrite connected in serial with air – wound inductor. Air wound inductor is used at upper HF- Bands. The air wound inductor contained 4 turns of copper wire in diameter 1.3- mm (16- AWG). Inductor is coiled on a form in diameter 10- mm. Then it is stretched to 6-10 millimeter (should check by experimental) in length. Tap inductor is coiled on ferrite ring Amidon T200-2. The inductor has inductance in 40- microHenry.

Figure 3 shows the inductor. Inductor has 15 taps. Tap # 1, 2, 3 made from each turn. Tap # 4, 6 made from each second turn. Tap # 7, 8 made from each third turn. Tap # 9 from fourth turn. Then taps spaced evenly among the rest taps. It is possible to use at the S- Tuner almost any tapped inductor with overall inductance up to 34- microHenry.





Figure 2 Design of the S- Tuner



Figure 3 Ferrite inductor

Binocular transformer was made on ferrite tubes used on the monitor cable. Through the tube was passed a length of a coaxial cable with Teflon dielectric. Braid of the cable was turned on to the transmitter inner wire was used for matching symmetrical load. **Figure 4** shows the binocular transformer and tapped inductor. Some different ferrite tubes may be used at the binocular transformer. However the ferrite tubes should be identical to each other and the transformer should not heat on the used bands.

Rear panel of the cabinet of the tuner made of plexiglass. All parts of the tuner have no electrical contact with the cabinet.

If at some reason the tuner do not provide symmetrical output (as usual at lack of the montage) it is need to connect a variable capacitor up to 30-pF to the ground and one of the output terminals. Then with the help of oscilloscope tune the capacitor to the symmetrical output signal.

The S- Tuner was used with transceivers FT-817, FT-857 and antenna G5RV. SWR was not more 1,1 at 600- Ohm antenna impedance.

Author is very appreciated to **RZ3DK** and **RZ3DOH** for their publication and advices on the binocular transformer.

73! Eugene (RZ3AE)

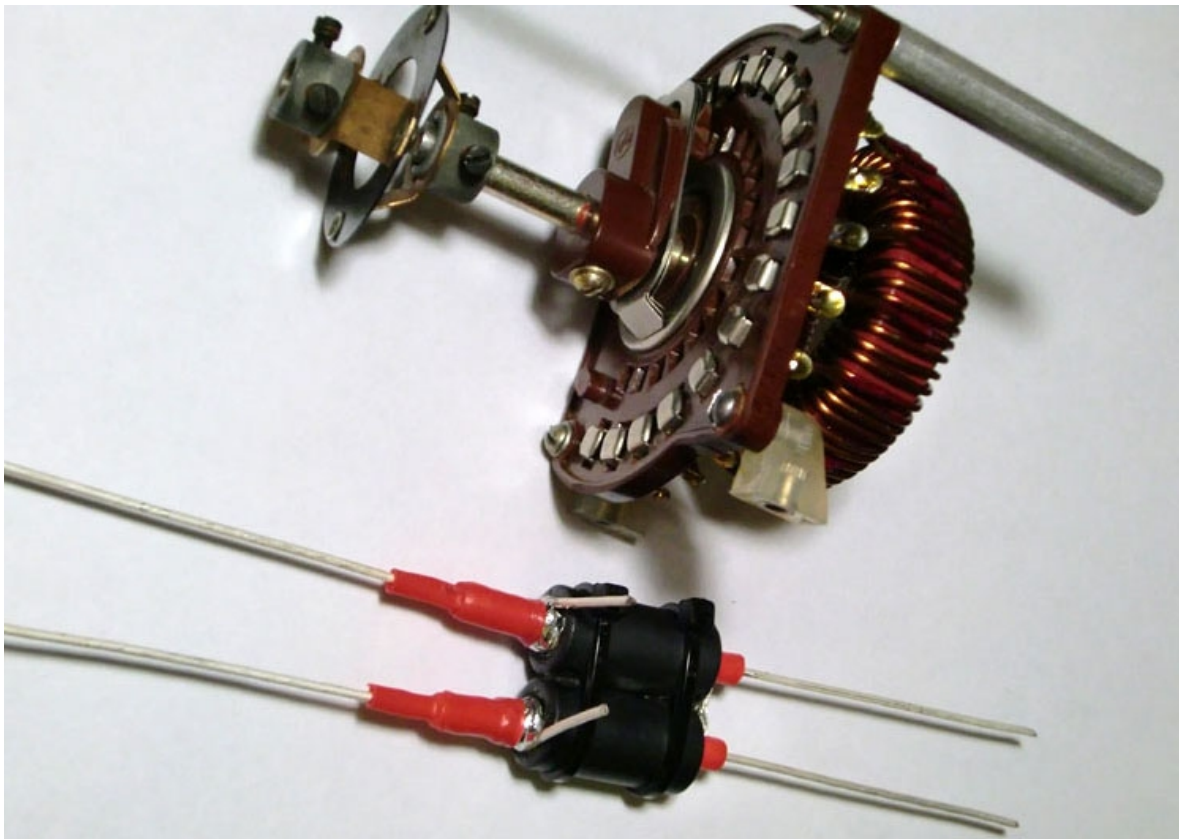


Figure 4 The Binocular transformer and tapped inductor.

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