Simple Field One - Wire - Length HF Antennas

Igor Lavrushov , UA6HJQ

Credit Line:
http: //
www.hamradio.cmw.ru/antenna/kusok.htm

Below will be described simple one- length- wire HF antennas. The antennas were designed for mountain's radio- expeditions. The main criteria were- low weight plus simplicity. All described below HF- Antennas were tested in Northern Caucasus Mountains with a transceiver FT- 817 and ATU MFJ- 902 and provided good result.

UA6HJQ

... About Antenna Wire

Copper wire in the plastic insulation is the best choice. Diameter of the copper wire should be 1.5- 2- mm. Wire that is thinner – has no enough mechanical strength, wire that is thicker - heavy. Antenna wires should be not too hard but not too soft. It should have reasonable rigidity. **Photo 1** shows some examples of good wires.

After choosing wires we should determinate the length for the antenna. In common the length depends on the used bands. 7- and 14- MHz bands are common used in the radio- expedition.

Photo 1 Examples of Some Good Antenna Wires

Expedition antenna for the bands should have length not less the 9 meter and no more the 21 meter. Why? Because we need antenna that would be work without counterpoises, so, the antenna should have length lambda or lambda/2. Shorten antenna has low efficiency, long- high weight.

Wire in length 10-meters would be enough if you would like to use bands 14- 28- MHz at the expedition. Antenna with such length is suitable for local and DX-QSO on 14- MHz and has good efficiency on 18- 28-MHz. Such antenna still is working on 7-MHz (lambda/4 length).

Wire in length 20-meters would work efficiency on 7- and 14- MHz as well as at 18- 28- MHz. The antenna provides local QSO at the 3.6- MHz. However at good propagation and if the end of the antenna is hanged up at 10 and more meters the antenna allows to make DX-QSO on the 3.6- MHz.

… How would it hang up?

Classical mountain expedition antenna is Sloper. **Figure 1** shows the antenna. Use any natural support- tree, stone, etc., to install the antenna.

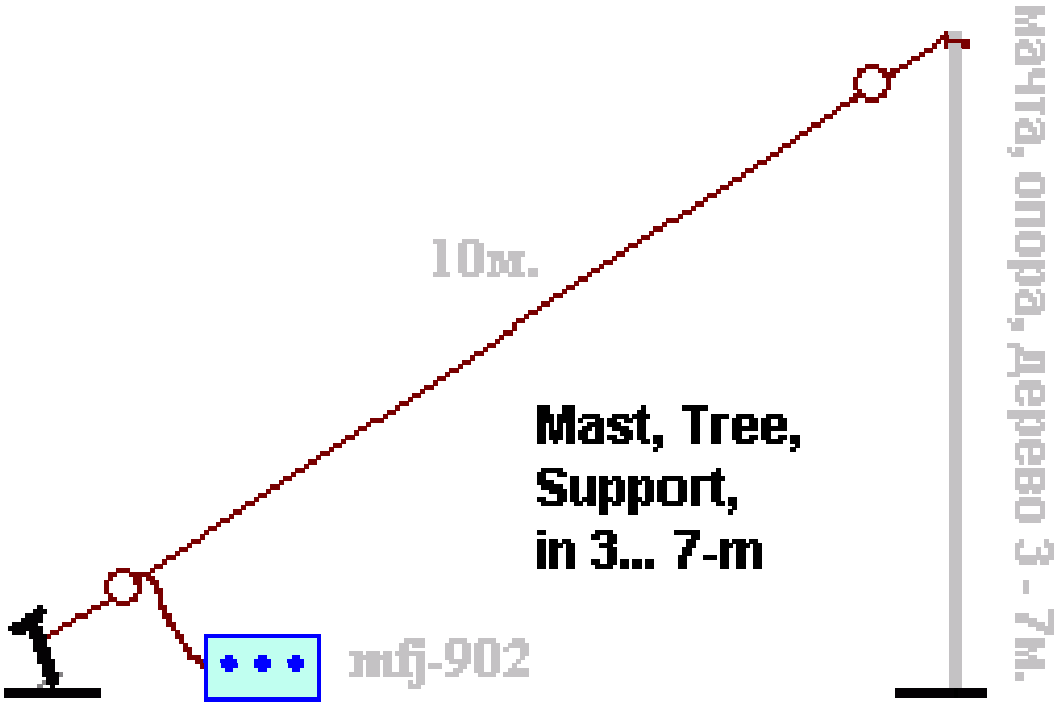

Figure 1 Expedition Antenna Sloper 10- meters length

For Sloper having length 20 meters use additional support. It may be any natural support- tree for example, or artificial- plastic fishing pole, for example. **Figure 2** shows Sloper 20 meters length. DD of the antennas shown on **Figure 1** and **Figure 2** has maxima radiation in direction of the incline of the antenna wire.

Antenna wire may be placed along the fishing pole. DD of the antenna has maxima radiation into another side from the incline of the wire. **Figure 3** shows Sloper with fishing pole as antenna part.

It is possible to install support or fishing pole at any place of the wire. In this case it is a variant of an asymmetrical dipole with the end fed. **Figure 4** shows the antenna. Good solution is to install the support in the center of the antenna wire how it is shown on **Figure 5.** In this case we have got a kind of I.V. antenna with the end fed. The antenna has enough efficiency at 7- and 14- MHz.

The feature of the Sloper antennas on the base of one wire is that all of the antennas are radiated almost 50/50% horizon/vertical polarization. It looks like a lack of the antennas. If you need antenna with the vertical polarization you may try helical antenna shown in the **Figure 6**. However the antenna needs good grounding or counterpoises.

ANTENTOP
FREE e- magazine edited by hams for hams
Devoted to Antennas and Amateur Radio
www.antentop.org

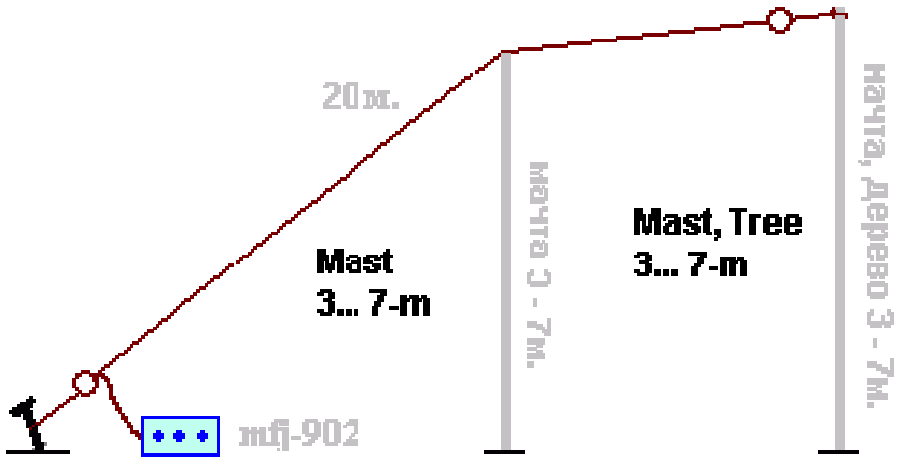

Figure 2 Expedition Antenna Sloper 20- meters length

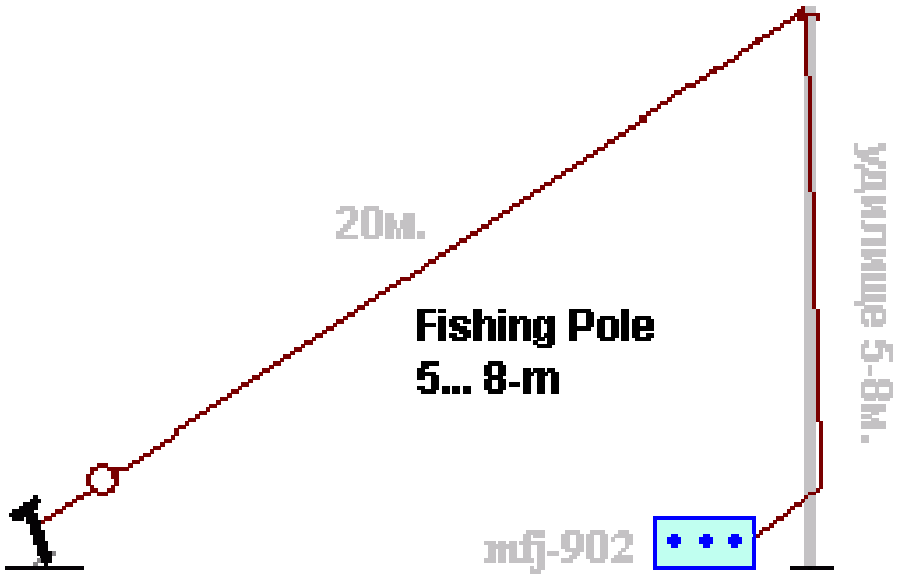

Figure 3 Antenna Sloper with Fishing Pole as Antenna Part

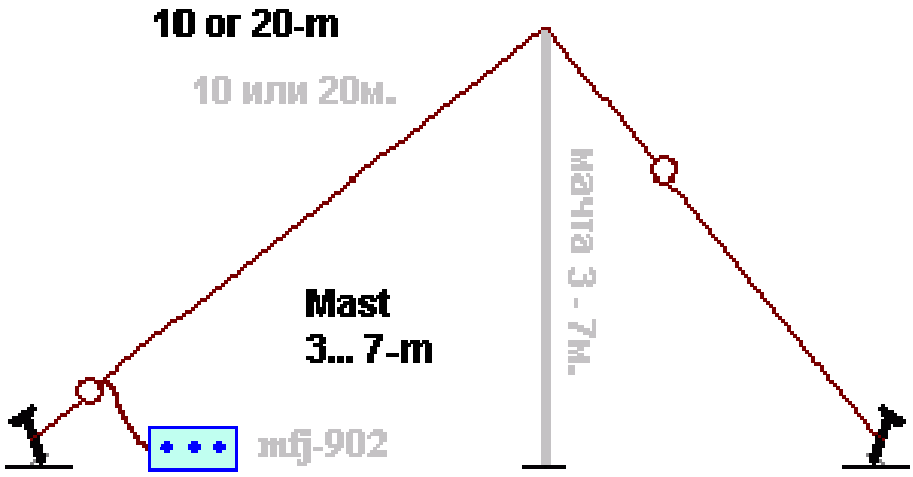

Figure 4 Asymmetrical Dipole Antenna with the End Fed

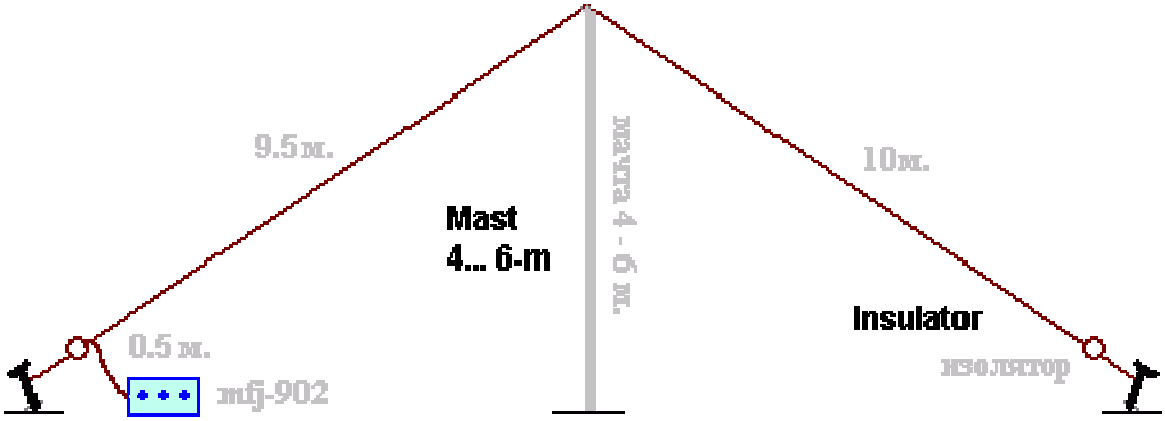

Figure 5 Symmetrical Dipole Antenna with the End Fed

All antennas, shown at **Figure 1**- **Figure 6** may work with ATU MFJ- 902 at 7- 28- MHz.

…In conclusion there are below some practical advices.

1. If you will use transceiver in known for you place where you can find natural support you may leave antenna mast (fishing pole) at home.

2. At emergency situation try wire 10 or 20 meters length at height 2- 3 meters above the ground.

3. Avoid place antenna end near tree or bushes, use plastic rope for distance between antenna and the subjects.

4. Very often grounding of the case of the ATU MFJ-902 may increase antenna efficiency. For grounding use a counterpoise in length 5- 20 meter. Sometimes several metal sticks inserted to the earth and connected (by wire any length) with the case of the MFJ-902 may provide good grounding.

5. In the forest use antenna shown in the **Figure 5**.

6. Protect antenna tuner (MFJ-902) from rain and snow. You may just install the tuner inside a tent.

7. Connect Transceiver and ATU by 50-Ohm coaxial cable of any length.

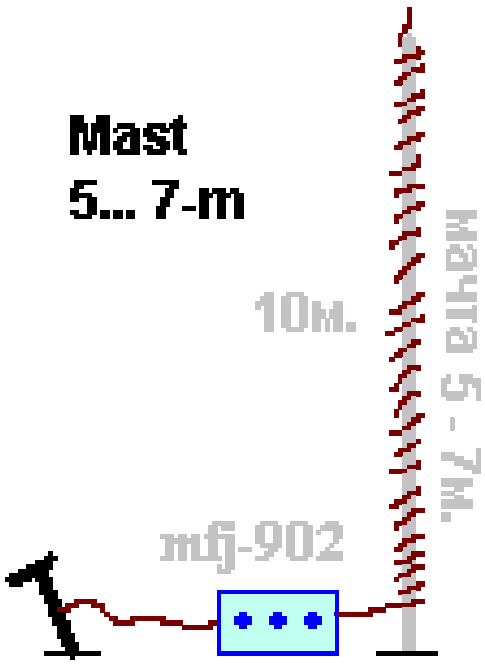

Figure 6 Helical Vertical Antenna

73!

June – 2007, UA6HJQ

Find All Books from
FREE ANTENTOP Amateur Library