

Water Pipe T-Joint at VHF Antennas

By: N. Filenko, UA9XBI ua9xbi@online.ru

Credit Line: www.cqham.ru

By the way, I was (and may be am) not an experienced VHF- man before I decided to do my VHF YAGI. I had serous doubt that I spoiled lots stuff while I made my YAGI. So I found for solution how to do the antenna without turning in garbage my antenna's material. When I went around a house-ware store I have seen polystyrene water pipe T-joint. **Picture 1** shows the T- joint.



Picture 1

I have bought some these ones. While making the VHF antenna several of T-joints spoiled were spoiled but other ones worked well in my design. **Picture 2** shows T- joint installed at my antenna.

The design has some benefits:

1. Antenna elements are isolated from traverse with gap in 6-10 mm
2. It is possible to move the antenna elements along the traverse.
3. It is possible to play with antenna design- change length between antennas elements and easy to change the elements



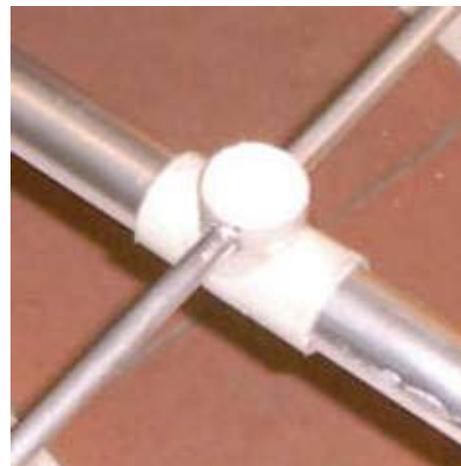
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Radio club 'Arktika' Championship 2004

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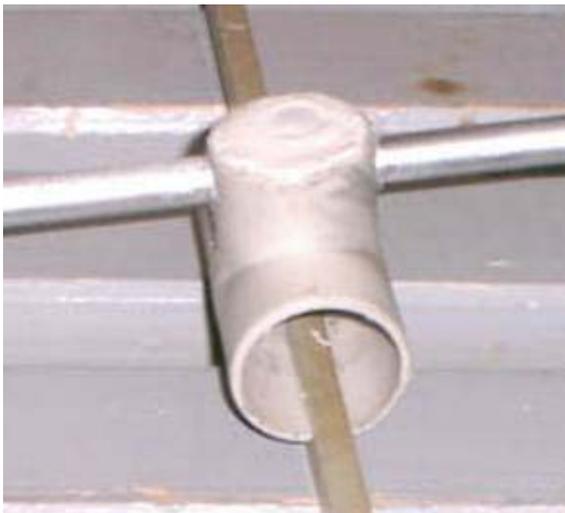
Picture 2

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4. Antenna elements are fastened without drilling the traverse.
5. Avoid screw, nuts and clamp in fastening of antenna elements.
6. T- joint is mechanically strong the antenna element.
7. Weight of one antenna element in length of 1 meter made from of a silumin tube in 10-mm OD with the T- joint was only 70 grams
8. Antenna made by step by step stringing of the T- joints with already installed there antenna elements.

How to use T- joint at antenna? Picture1 and 2 show the way. However, some advices are below. Take T- joint that has ID closest to a diameter of antenna traverse. If the T-joint has ID Less the diameter of antenna traverse you need gnaw through to obtain needed ID. Leave wall thickness not less the 2 millimeters.

Do ID on to 0.5- 1 –millimeters less the OD of the traverse and do longitudinal cut in the lower part of the T- joint. At the case before installation of the T- joint to the traverse a small thing (like wooden or metal bar) should be inserted into the cutting. See [Picture 3](#). When the T- joint is sitting at the right place at the traverse just remove the bar and the T- joint would be fastened well to the traverse.



Picture 3.

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It is possible hard fastened the T- joint to the traverse by 1- 2 small screw. Another way for hard fastening – put some glue in to pipe- bend. The pipe- bend was closed by a plastic washer and epoxy. (See [Picture 3](#).)

Holes for antenna elements should have ID on to 0.2- 0.5 – millimeters less the OD of the antenna element. The holes should be drilled with drilling machine. T-joint at drilling should be placed on to horizontal table of the drilling machine. Antenna elements go through the holes with pressure but then hard fastened at the T-joint.

Active dipole vibrator made from two halves may be fastened to T- joint with help of a plate made from a good and mechanically hard insulated stuff. It may be thick PC, thick plexiglass.

The plate is fastened to cut side tap. [See picture 4](#).



Picture 4

However, it is possible to insert two half vibrator into a thick rod from an insulated stuff, then the rod with the active vibrator is fastened into the T- joint above mentioned ways (See [picture 2, 3](#))

T- joint was tested to strength after being three hours at minus 28 degrees Celsius. Attempt to break the T- joint pooling of the antenna element (fastened inside the T – joint) is failed. Antenna element was broken (4-mm OD silumin) , T-joint- no. It was tried to break the T- joint with help of a hammer. Hammer left only slight dent on the T- joint but no any crack.

Using prepared T-joints (with drilled holes for antenna element and traverse) it takes from me only several hours to assemble 7- elements VHF antenna. Hope, it will work long time for me. [See picture 5](#).



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Picture 5

T-joint may be used for fast assembling of field VHF antennas. It needs drilled hole for traverse on to 1-1.5 – mm less then the OD of the traverse. Then partially cut T- joint toward to side tap. Do smooth the cut sides with the help of a file, See **Figure 1**.

So, it is possible to put the rework T- joint with antenna element on to traverse, then push the T- joint and snap it onto the traverse. If it is need you may fastened the reworking T- joint with help of a clamp.

73 de UA9XBI!

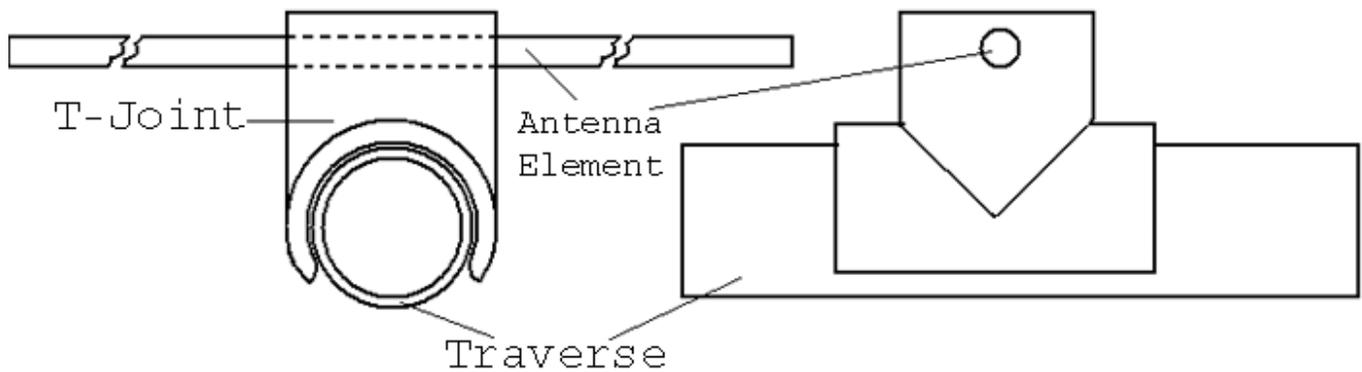


Figure 1