

An ingenious, easy-to-implement tree support for your wire antennas.

# The Wouff Hang

## Roy Lewallen, W7EL

Other than climbing, common methods to get an antenna support rope over a tree branch include using a bow and arrow and potato gun-type devices. I've often used a slingshot to put up antennas as high as 90 feet for ARRL Field Day. While that works fine for temporary installations, in the long term, the rope will dig into the wood or the tree will simply grow around it, causing the rope to seize and making it impossible to lower the antenna or retrieve the rope. A pulley or other low-friction, low-wear bearing is needed.

The Wouff Hang (see Figure 1) — whimsically named for the famous Wouff Hong from ham radio's history, which its shape evokes — is such a bearing. It can be constructed in a few minutes, is inexpensive, and can be put high in a tree without climbing.

## Construction

The Wouff Hang is made from common PVC water pipe or electrical conduit found at any hardware or home supply store and glued together with ordinary PVC pipe cement. One or 1½-inch PVC pipe is ideal for most installations.

While the overall size can be adapted to the branch, it is important that you don't modify two features. First, note the inward orientation of the 45° fitting at the long, curved end. Do not rotate this fitting, as it permits the Wouff Hang to rotate into the correct orientation during the hanging process.

Second, the length of the arm with that fitting must be considerably longer than the pipe stub to prevent the Wouff Hang from rotating around and disengaging from the branch once in place. However, the 45-degree elbow on the short end can be rotated 180 degrees if the antenna end of the rope will be exiting more downward than horizontally outward.

I recommend using Schedule 40 or Schedule 80 PVC pipe due to its strength and durability. A second consideration is UV resistance. Most plastics deteriorate with prolonged exposure to sunlight. As trees are inherently shady and PVC pipe is moderately UV resistant, this might not be a problem at your location. However, some electrical conduit is marked as sunlight resistant, so consider using that when available. Also, a coat or two of latex exterior house paint over a suitable primer on your Wouff Hang will provide extra UV protection.

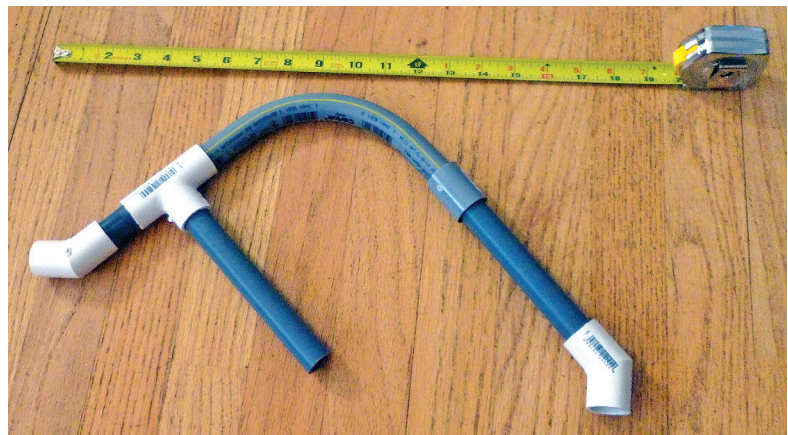
My local hardware store had the 90-degree curved piece in Schedule

80 electrical conduit, so I used that. Most of the wear should be on that piece, so the heavier Schedule 80 conduit will increase the longevity of the device.

## The Hanging Process

Before hanging, choose the rope you'll be using with your antenna. Larger diameter rope will cause less pressure on the bearing surface and reduce the tendency to cut through it. Smoother rope will also reduce wear. I recommend using at least 3/16-inch diameter black braided-jacket Dacron rope. I've had a Wouff Hang up for quite a few years using 3/16-inch diameter Dacron rope. It has supported numerous antennas with repeated use, and the rope still moves as smoothly as it would through a pulley.

The hanging process is simple, but I recommend trying the hanging process on a low limb before raising the Wouff Hang to its final place. Once it is out of reach, it won't come down.



**Figure 1** — A Wouff Hang made with 1-inch electrical conduit and PVC pipe fittings. Size can vary depending on your application. The antenna end is on the left.

**1** Begin by pulling successively larger twine and rope over the branch until the final rope is in place (see Figure 2). It's important to distinguish between the *antenna end* of the rope, which will be going to the antenna, and the end you'll be using to pull the antenna up and lower it down. The free length of the *antenna end* will have to be at least twice the distance from the branch to the ground. If it's shorter than that, you can temporarily tie on another rope to extend its length.



**Figure 2** — Pulling the rope in place over the tree limb.

**2** Thread the Wouff Hang onto the antenna end of the rope, as shown in Figure 3. Tie some object on the antenna end of the rope that is large enough to prevent the lower end of the rope from entering the pipe, and is also large enough to not become jammed in the tube.



**Figure 3** — The Wouff Hang prepared for raising.

**3** Next, pull on the other end of the rope to hoist the Wouff Hang. You might not be able to see it, but you can feel the resistance when it reaches the branch. As you can see in Figure 4, in a low-limb test run, the 45-degree fitting at the top end will cause the Wouff Hang to rotate into the proper position.



**Figure 4** — The Wouff Hang rotating to correct orientation.

**4** Keep pulling to slide the Wouff Hang over the branch (see Figure 5) and into its final position, shown in Figure 6. Now you can lower the rope on the antenna side of the Wouff Hang to remove the blocking device.



Figure 5 — Moving the Wouff Hang into place.



Figure 6 — The Wouff Hang in the final position.

You now have a simple and effective raising and lowering assembly for a wire antenna. The Wouff Hang works the same as a regular pulley, except that it won't jam, and will continue working for a long time.

## Adjusting the Build

Roy described how he used what he could find at his local hardware store to construct his Wouff Hang, but there are alternatives if you have difficulty finding supplies. For example, unable to find the swept right-angle conduit shown in the article, I instead used two 45-degree couplings. There was no noticeable impact on the operation and hanging of the Wouff Hang. For the temporary blocking device on the antenna side of the rope, I used a surplus snap-on ferrite held in place with a tie wrap (the snap-on ferrite must be large enough to not become jammed in the Wouff Hang PVC pipe) that worked well. When the Wouff Hang is in place and the antenna side of the rope is lowered, it is easy to snip off the tie wrap (being careful to not nip the cord) and remove the snap-on ferrite. — *Phil Salas, AD5X*

Photos by the author.

Roy Lewallen, W7EL, is the creator of the popular antenna-modeling software, *EZNEC*, and the author of many articles on ham radio-related projects. He was inducted into the Royal Order of the Wouff Hong at the ARRL National Convention in Seattle in 1980. While Roy has been hanging antennas since before getting his Novice license in 1957, this is his first attempt at merging what he learned from those experiences. You can contact Roy at [w7el@eznec.com](mailto:w7el@eznec.com).

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## New Products

### FlexRadio Systems' SmartSDR™ v3.0

SmartSDR v3.0 introduces multiFLEX™, a multi-client feature for the FLEX-6000 series transceivers. Available as a purchase downloaded from the FlexRadio website, SmartSDR v3.0 provides operators with the ability to connect an additional client device, such as a PC, Maestro, iPad, or iPhone, to their FLEX-6000 Series transceiver. SmartSDR with multiFLEX also gives users second-radio capability for the price of \$199. multiFLEX affords the operator the ability to use multiple clients in one location; allows for two operators to share the best antenna at the site, and enhances remote operation capabilities. In addition to the multiFLEX feature, the first release of SmartSDR 3.0 includes a new menu/panel for band settings that allows users to set certain settings per band and an updated TX/MIC profile so settings changes are saved on the fly.

SmartSDR v3.0 is available for download now. For additional information on SmartSDR v3.0, the FLEX-6XXX products, or FlexRadio, visit [www.flexradio.com](http://www.flexradio.com).