

## Shopping List for a 1" Tape Measure Yagi for 2 Meters

There's a number of ways you can go when building this portable antenna. It's features include flexible elements that will support itself, but fold when inserting into the car or storing. It is lightweight, but can be made more sturdy for an increase in cost. And, it can be easily repaired should an element break. Plans for construction are all over the internet.

First, you must decide IF to use a broken or used 1" tape measure for your elements. 1" wide is preferred, as it will stand up to wind better than a 3/4" tape measure. If you have at least 9.3333 feet of usable tape measure, you can salvage an old, broken one for this purpose. If not, you may want to go buy a 10 foot tape measure and disassemble it for your materials. In 2024, they run about \$15 to \$20 each, so you can see why we recommend a used, kinked, or broken one.

Second, the spine or support mast for this yagi antenna is usually 1/2" PVC pipe. That is light weight, but some people prefer the 3/4" PVC pipe as it is slightly stronger and feels more firm. Note that the increase in size will require different unions and hose clamps, and the price increases if you do this. At a minimum, you will want to buy 3 feet of PVC pipe in either size diameter. This pipe will be cut into 12 1/2", 8" and whatever remains for a "handle" to grip.

You will need one UNTHREADED T-connector for your PVC pipe. These currently run .79 for 1/2" and .86 for 3/4" You will also need TWO X-cross connectors for your PVC pipe. These run about \$2.69 each in 1/2" and may run \$5.21 each for 3/4". This is easily your most expensive piece you will buy, but it is essential.

To hold your tape measure elements in place against the PVC connectors, you will need a total of six hose-clamps that reach around the above PVC connector...NOT just the PVC pipe. This usually means #8 hardware that adjusts between 7/16" to 1 inch in 1/2" wide band. Check to assure they fit around your PVC couplers before leaving the store. They also are much cheaper in bags of 10 units, though you only need six.

Alternatively, you can try replacing these metal hose clamps with 1/2" wide cable ties. Try to find the kind with a press-and-release style, so that you may remove and reapply the clamp. Do not settle for traditional 3.6 mm cable ties unless you apply several of them for each clamp connection. This has been recommended but not tried yet. It might bring the price of clamping down considerably.

You will also need a 5" hairpin wire to jump between the two driven elements of the yagi. The gauge is not important, but it must be solderable to the sanded, exposed end of the tape measure elements. It should be rugged enough to stand some abuse or being knocked about. When you solder this connection, you'll want to use flux, but not the acid flux as it continues to eat the wire after the solder job is done, making it a weak link and subject to breakage.

Also soldered at this point will be the conductor and shield of a length of RG-58 coax. A typical length might be 3 feet. Though not necessary initially, this coax can be threaded through the PVC mast of the handle and wound tightly 7-8 turns around the outside of the pipe to form a "balun". Such a balun is

used to reduce spurious signals, but is not necessary initially. It can be added later or with revisions to your Yagi antenna.

Likewise, the standard tape measure yagi depends upon 3 element bays, however some Hams have experimented with making 4 or 5 reflector bays, which makes for a more tight beam or narrow signal path. The above quantities and pricing do not reflect these revisions.

Finally, your coax length (lead) will require the proper connector to your radio antenna connector. Traditionally, this has been a BNC connector, but some radios require either a PL-259 male connector or a SMA connector. BNC connectors have been preferred in case you want to insert an attenuator between your antenna and the radio when you are getting close to a strong, over-whelming radio signal. NOTE: YOU WILL NEVER WANT TO TRANSMIT WHEN AN ATTENUATOR IS IN-LINE. This is for receive mode ONLY. Most attenuators have male connectors on either end to mate with a BNC jumper, and allow for quick insertion.

Lastly, when assembled, your PVC spine or mast will fit snugly enough that a PVC glue will not be necessary. This also allows you to "unstep" the mast and make changes easily. Once glued together, such modification become much harder to accomplish, though not impossible.

If your tape measure yagi is going to be a permanent installation, on a mast or above ground, you will probably want to glue the PVC parts together so that they don't twist in the wind. You may also want a longer "handle" than the approximately one foot remainder this project leave you.

The above discussion deals with what elements and parts you will want to shop for as you assemble your yagi antenna. It has not specified the construction steps, which can be found elsewhere.

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Feb. 3rd, 2024