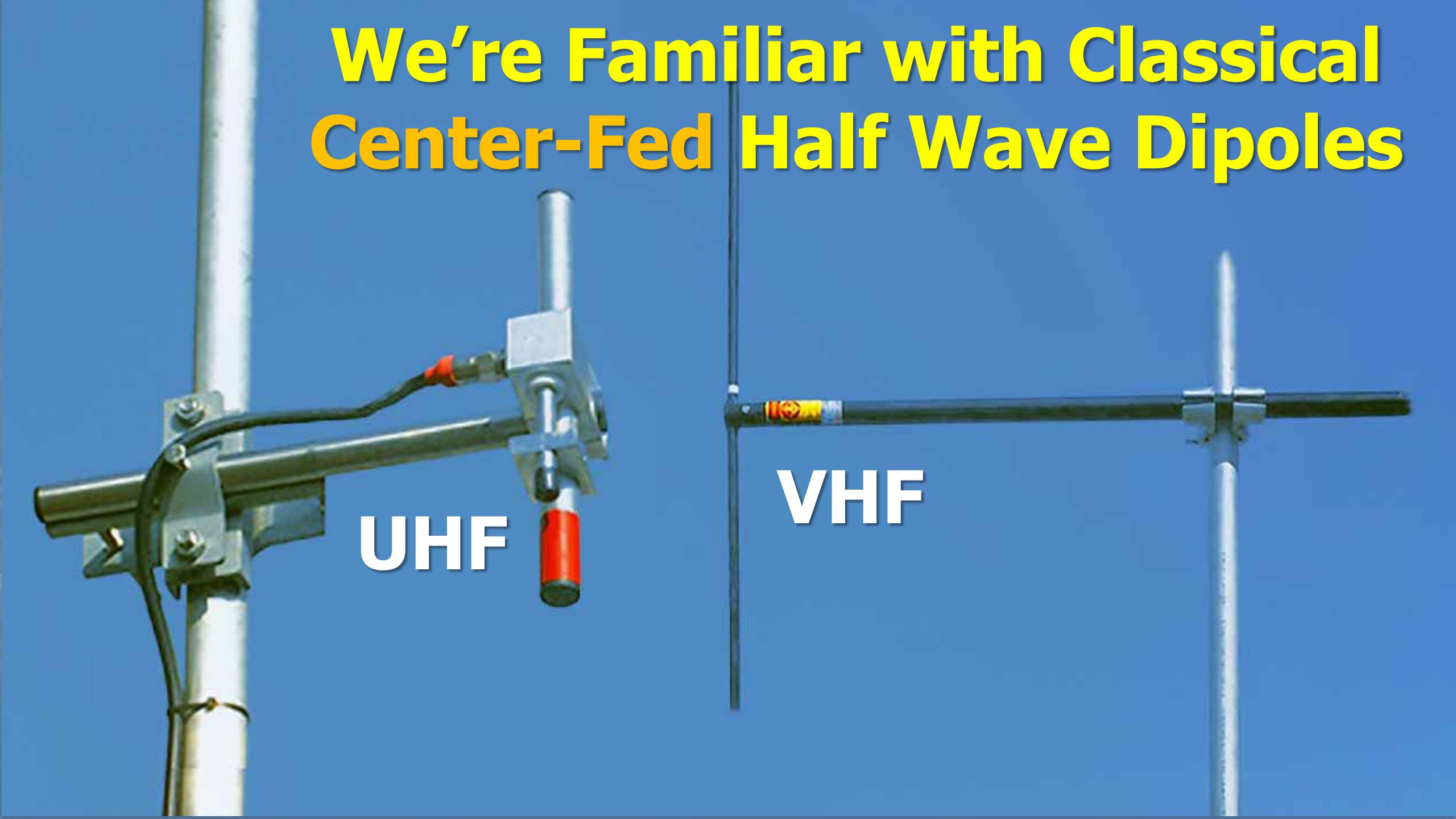
Ultra Simple Coaxial Dipole

Ideal new ham first build
Very useful for experienced ham
Great club group build-it project

We're Familiar with Classical Center-Fed Half Wave Dipoles



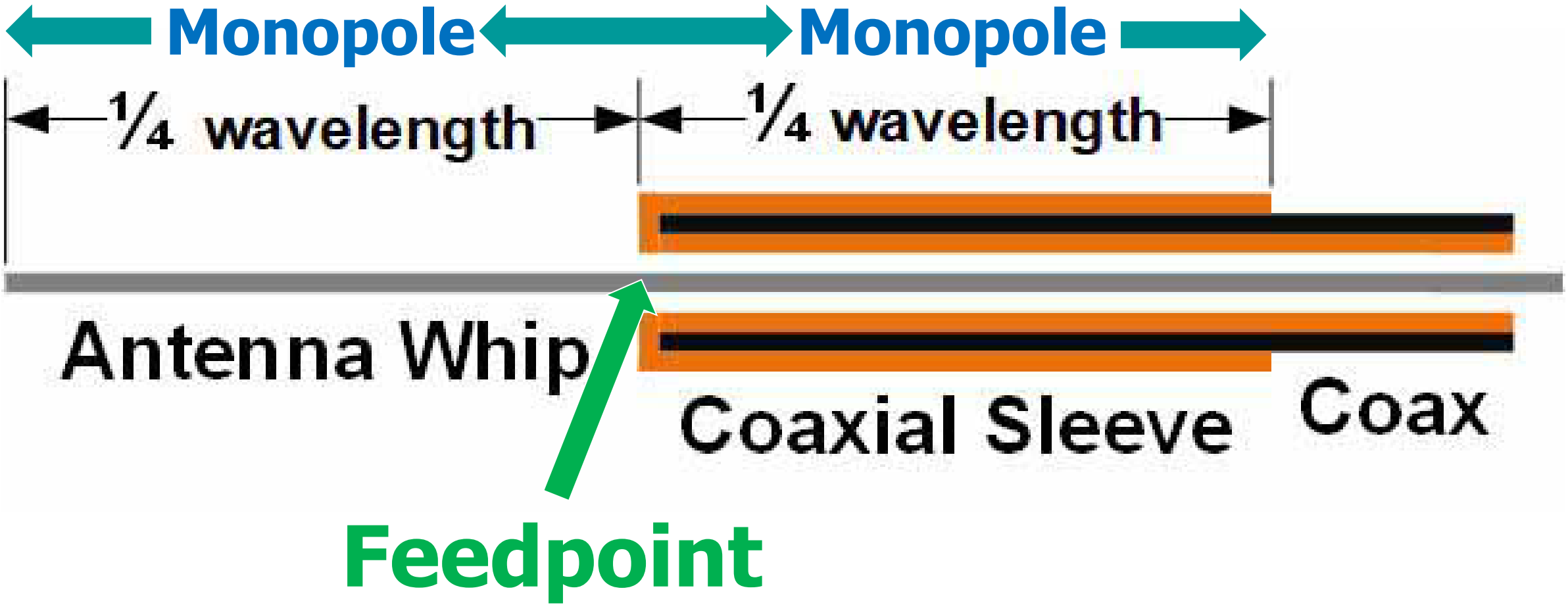
Advantages to λ/2 Antennas

Side Feed not handy for a λ/2

Mobile Antenna

Base Station Antenna

Coaxial/Sleeve Dipole



Dual 70cm Coaxials in Rear Fenders
Fiberglass Body

70 cm
Coffee Can
Sleeve Dipole

1978

July 09 QST

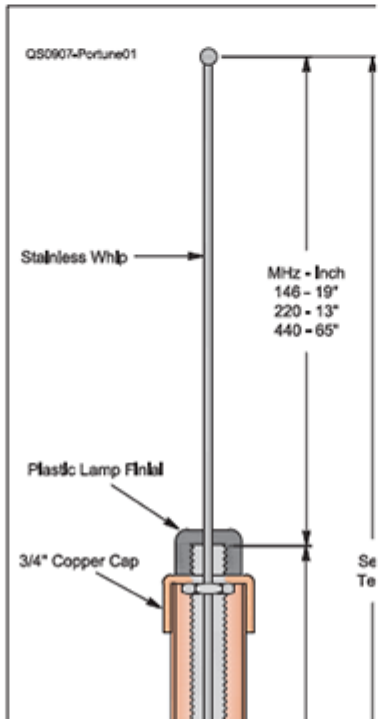
Homebrew Coaxial Dipole for VHF or UHF

Here's a base station antenna you can easily build for 146, 220 or 440 MHz. Performance is equal to a J-pole, but it's smaller, less obtrusive and more weatherproof.

John E. Portune, W6NBC

Hams like to build antennas, especially if they're made from ordinary hardware store items and can be assembled with common hand tools. Here is a homebrew coaxial dipole built from a small stainless whip, a length of threaded

here made from a threaded table lamp tube, the lower part of the whip becomes the center conductor of a short length of rigid coax feeding the center of the antenna. Now connection to normal coax is easily made below the antenna. To form the rigid coax section, you'll need to insulate the center conductor (lower part of the stainless whip) from the lamp tubing with some ¼ inch inside diameter (ID) polyethylene tubing. Hardware stores normally carry it. This short length of rigid coax formed in this way isn't precisely 50 Ω characteristic impedance, but the difference is totally insignificant. The drawing in Figure 1 shows the details.



Assembly Details

The bottom half (λ/4) of the radiating dipole is a coaxial sleeve made from ¾ inch copper pipe and a pipe cap. The coax feed runs up its center to the connector at the bottom of the lamp tubing. Support and insulation of the bottom of the sleeve is provided by a ¾ inch CPVC plastic pipe cap. For those not familiar with CPVC fittings, they're made to mate with copper pipe and can handle high water temperatures. That's

April 20 QST

A Ham Gentleman's VHF/UHF Walking Stick Antenna

Walk about freely with better coverage at a parade, on a stroll, or hang the antenna in a tree. Its utility will impress you.

John Portune, W6NBC, and Ernie Sloan, W6ND

Over the years, walking sticks have held stilettos, whiskey flasks, fencing foils, and even guns. This walking stick conceals an efficient dual-band VHF/UHF antenna that will greatly extend the range of your handheld transceiver.

VHF/UHF portable antennas are often seen clamped to a picnic table, mounted on a tripod, or hung from a tree. But at a recent parade, it struck us that a more versatile design might be a classic gentleman's walking stick antenna (see Figure 1). Hold it up when you want good range, or use it as a walking stick. Our design evolved from the coaxial dipole.

Figure 1 — John, W6NBC, holding the gentleman ham's walking stick in an operating position and as a walking stick.

The Choke Coaxial Dipole

The coaxial dipole design consists of a λ/4 monopole mounted over a λ/4 cylindrical metal sleeve (see Figure 2, right). The feed coax enters through the bottom end of the sleeve and runs up to the center of the antenna. The inner conductor connects to the monopole and the shield to the sleeve. Our coaxial dipole design (see Figure 2, left) avoids the coaxial sleeve.

When RF arrives at the center feed point, it runs upward on the monopole, and also downward on the outside of the shield. However, we placed a choke a λ/4 down

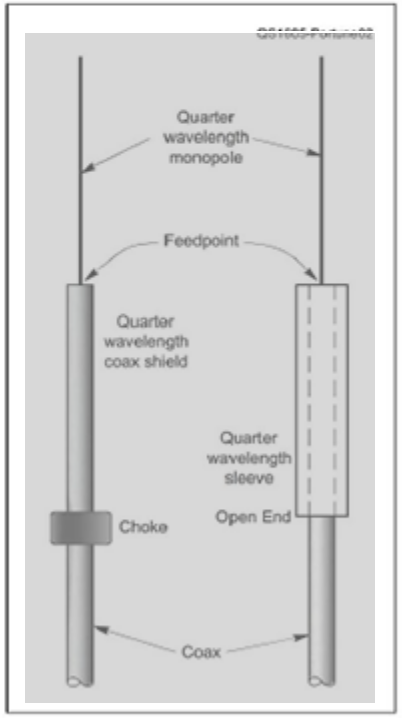
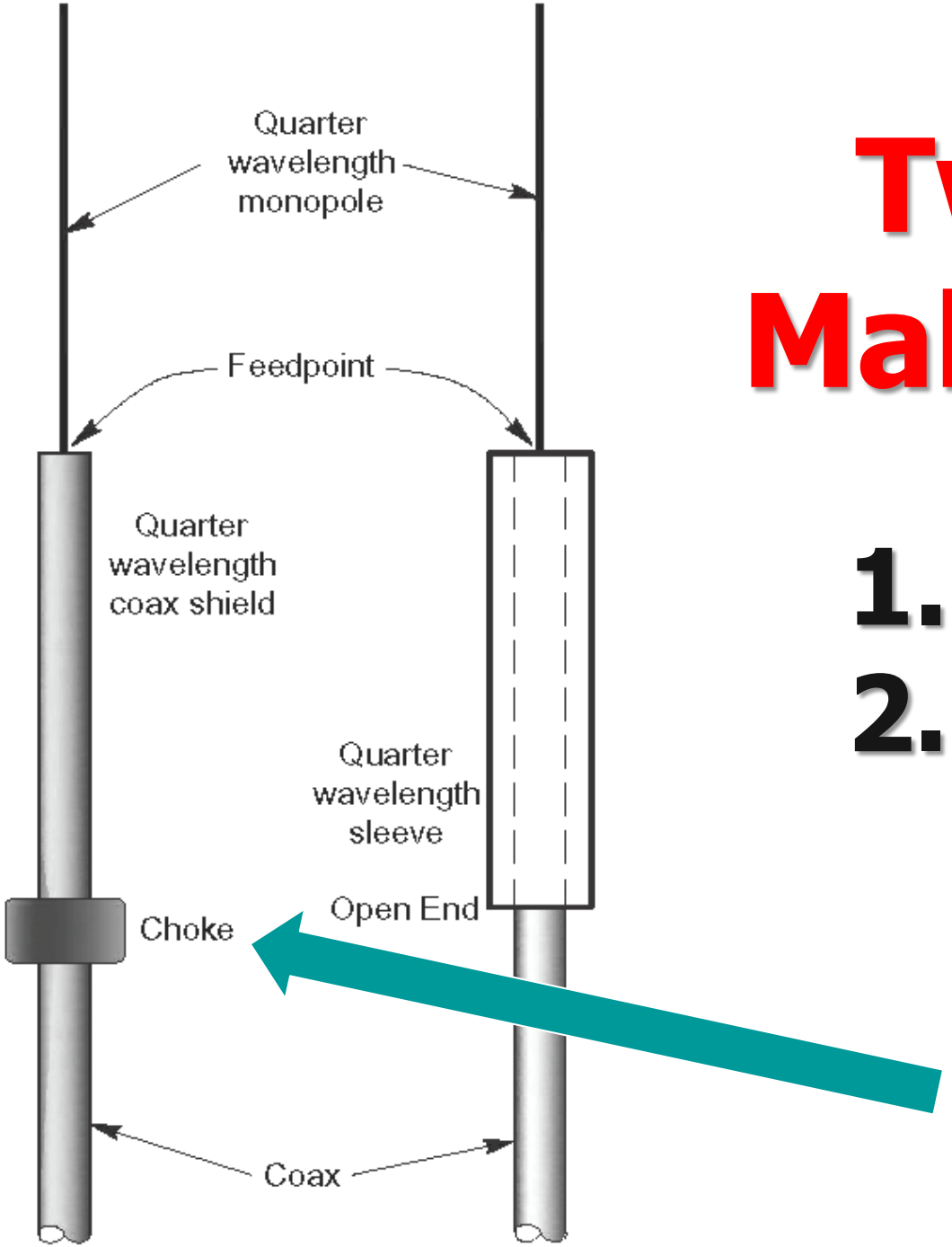


Figure 2 — A conventional coaxial dipole (right), and a choke dipole (left).

UHF radiation pattern that closely resembles the VHF pattern.

We placed two 70 centimeter stubs, one a λ/4 above and the other a λ/4 below the feed point, so that the outer ends of the antenna "disappear" on 70 centimeters and the radiation pattern becomes ideal. With the stubs installed, the antenna is a λ/2 dipole on 70 centimeters. On 2 meters, the

Our design dimensions (see Figure 5) are a compromise because the 2 meter and 70 centimeter bands are not quite in an



Two Ways to Make the Sleeve

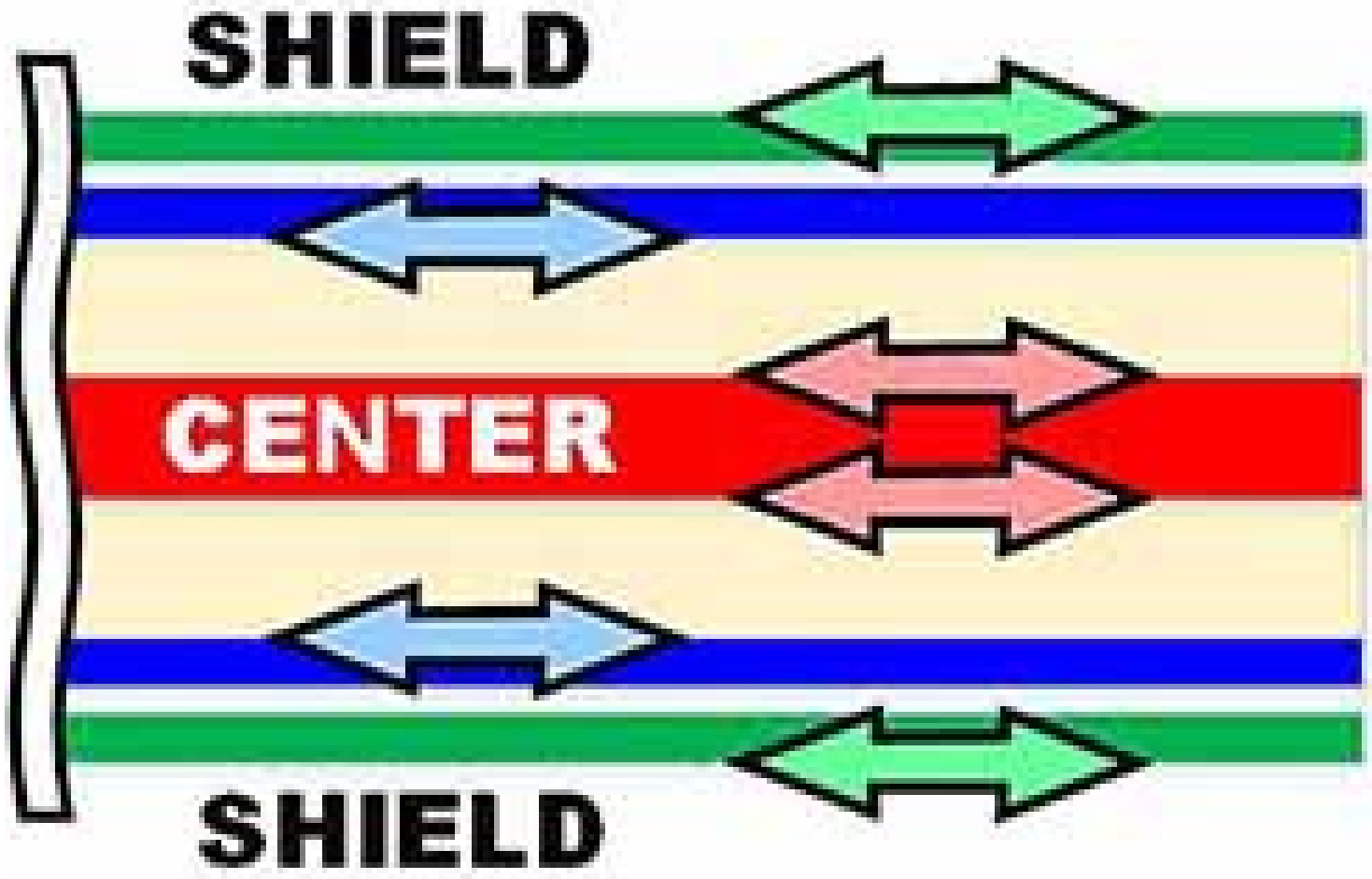
1. **An Actual Sleeve**
2. **A *trick* – place a choke λ/4 down the sleeve from the feedpoint**

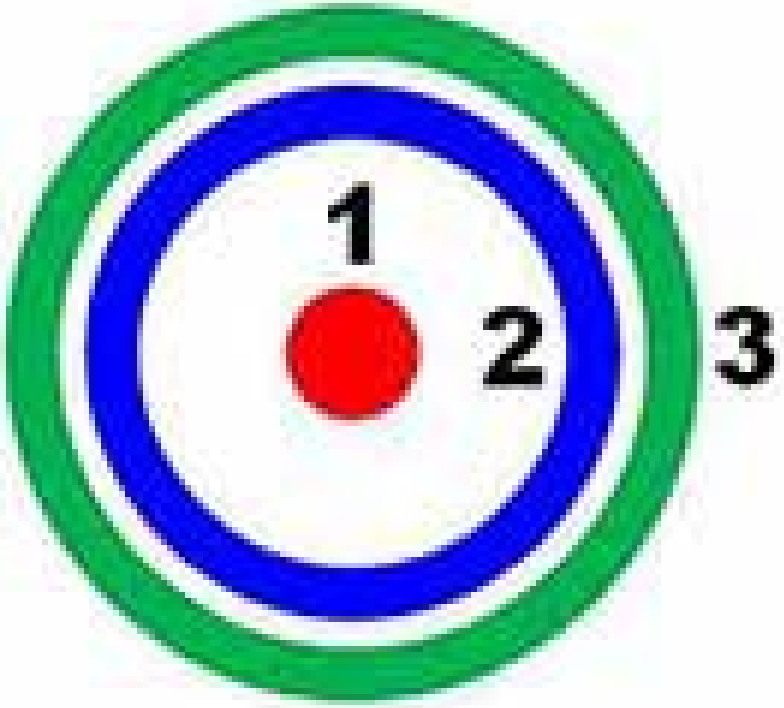
The choke causes the coax to do double duty:

1. Act BOTH as the coax
2. And the sleeve

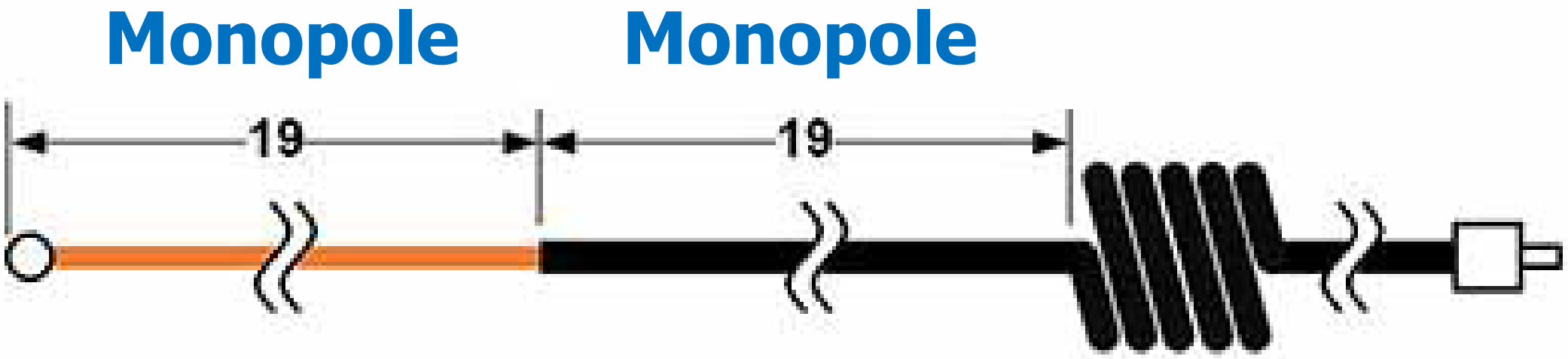
How does it do it?

Little Known : Coax has 3 wires





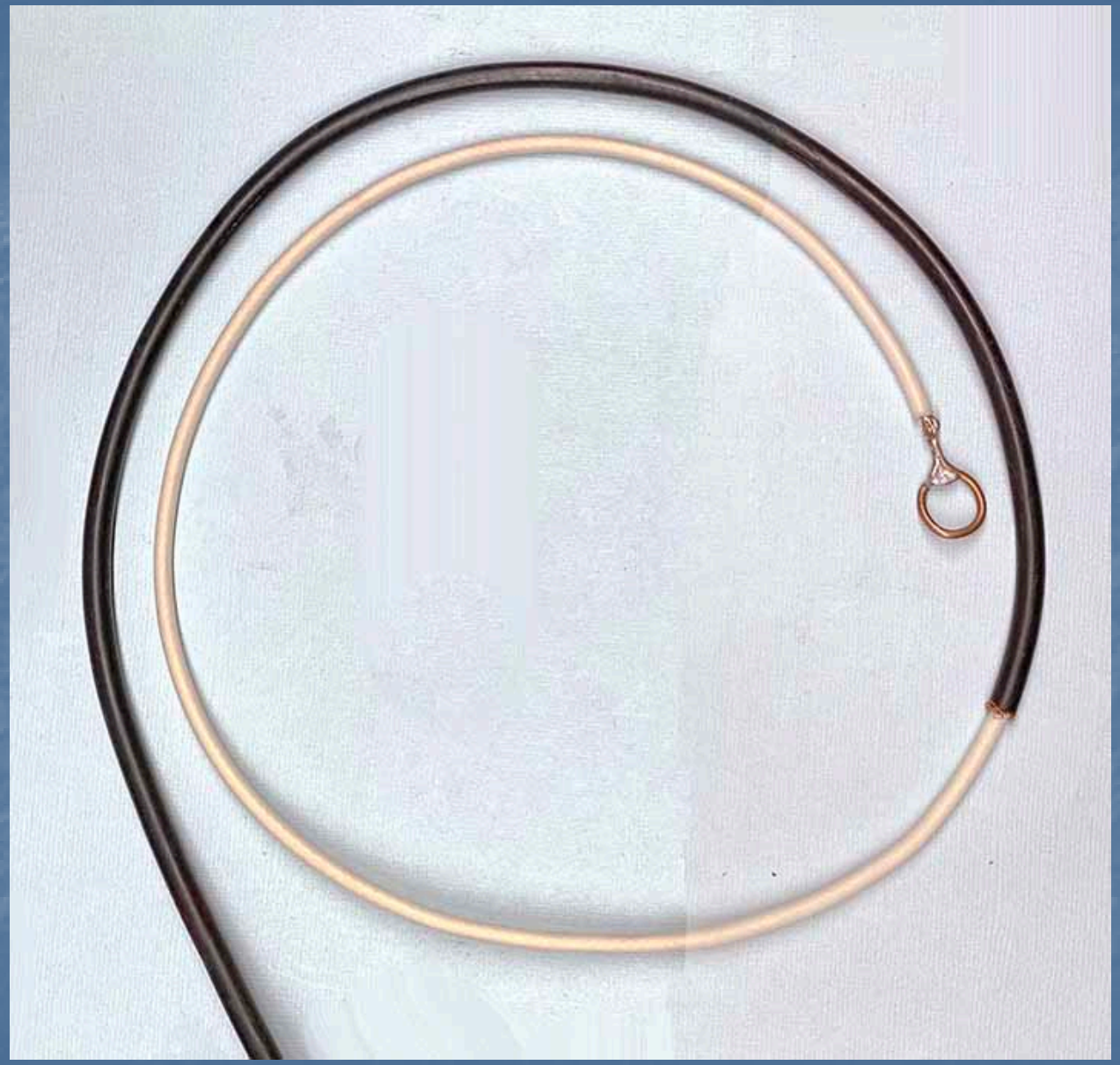
Schematic of Choked Sleeve/Coaxial Dipole



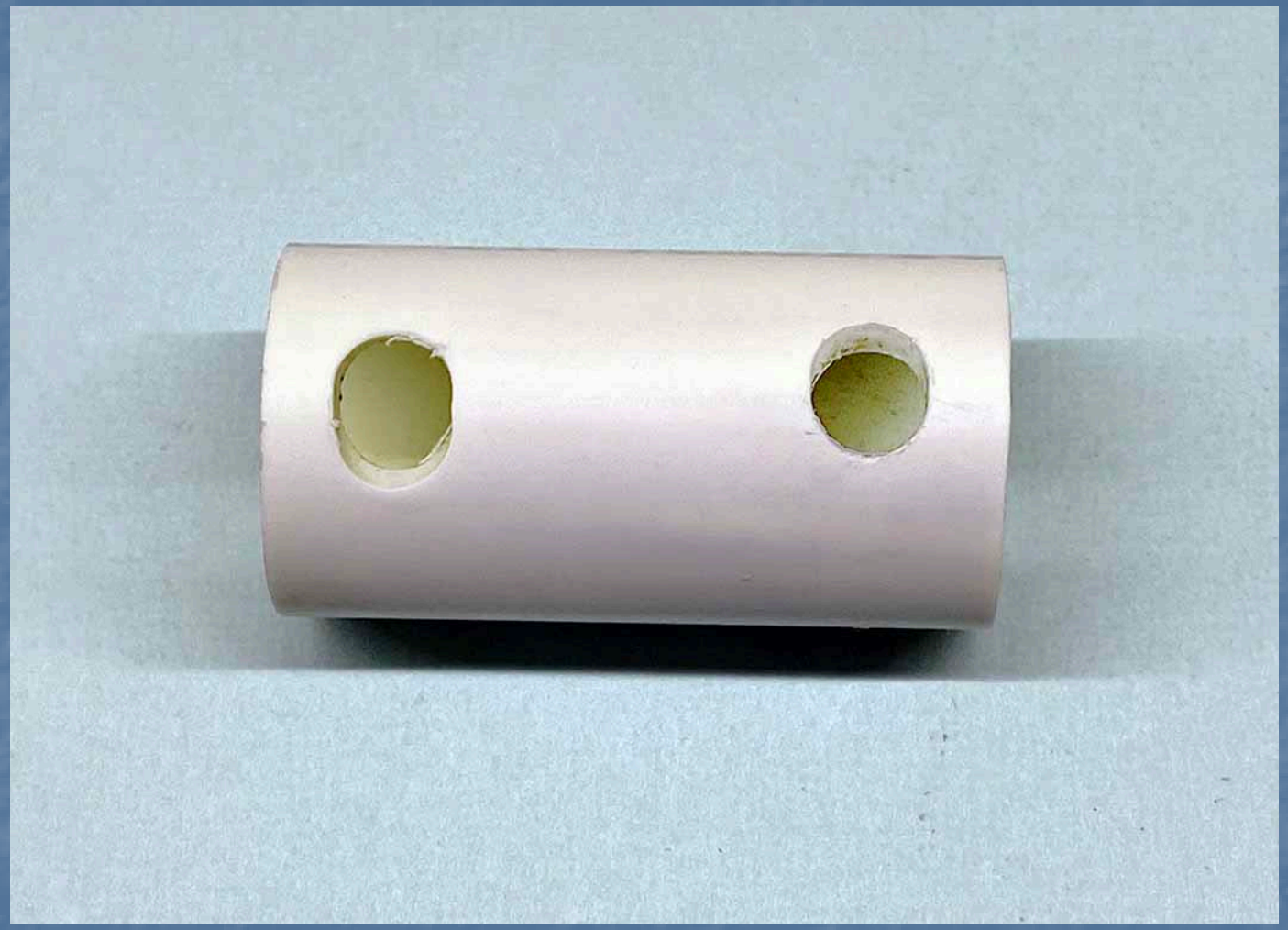
As a Portable Antenna

Same insides for
A Base Station Antenna

w6nbc.com/slides



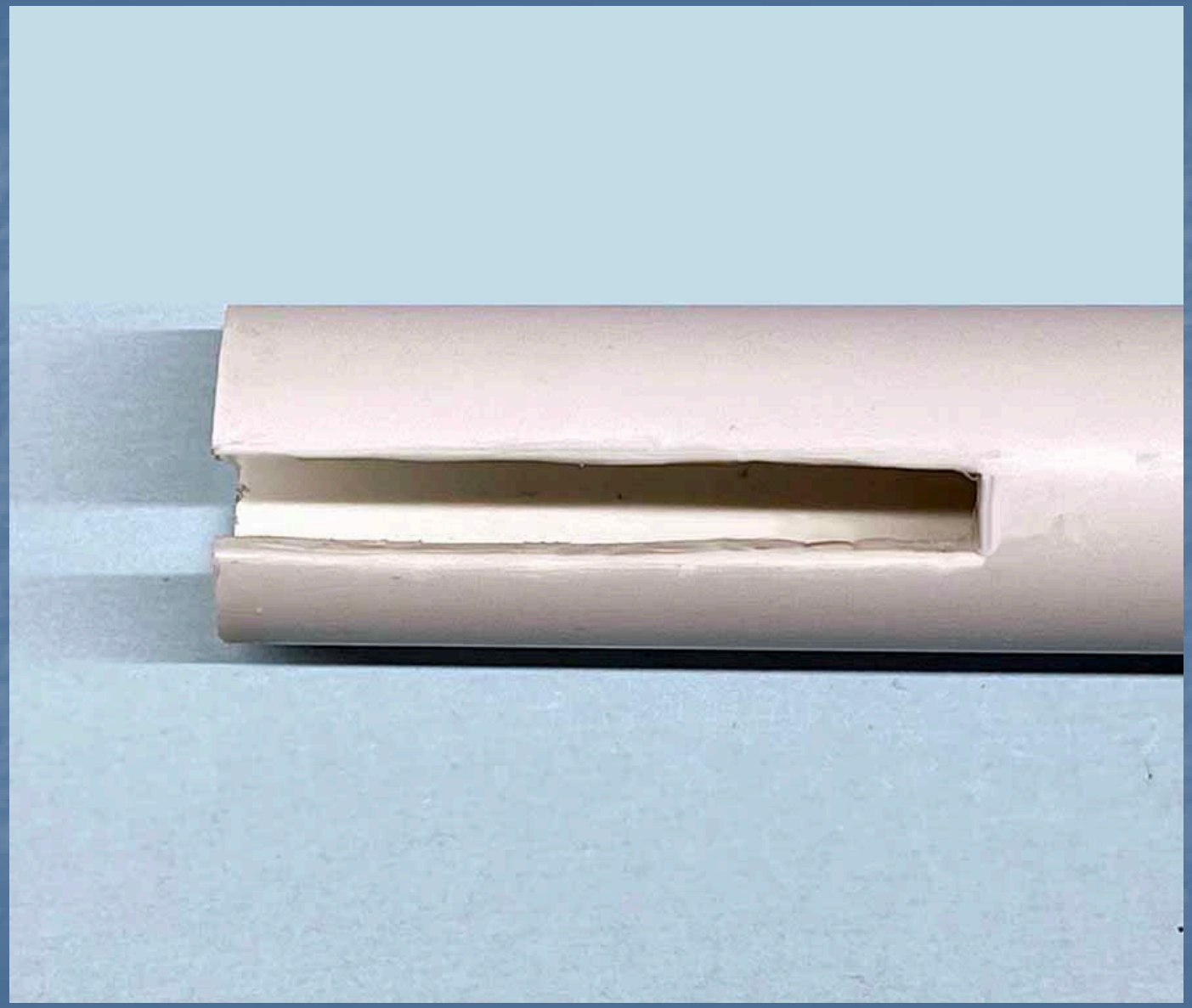
- Cut 6-8 ft . of RG-Mini 8 coax.
- Remove 21 in. of the jacket and shield.
- Remove 2 in. of the dielectric from the center conductor.
- Bend & tin a ½ in. hanging loop at the end of the center conductor.



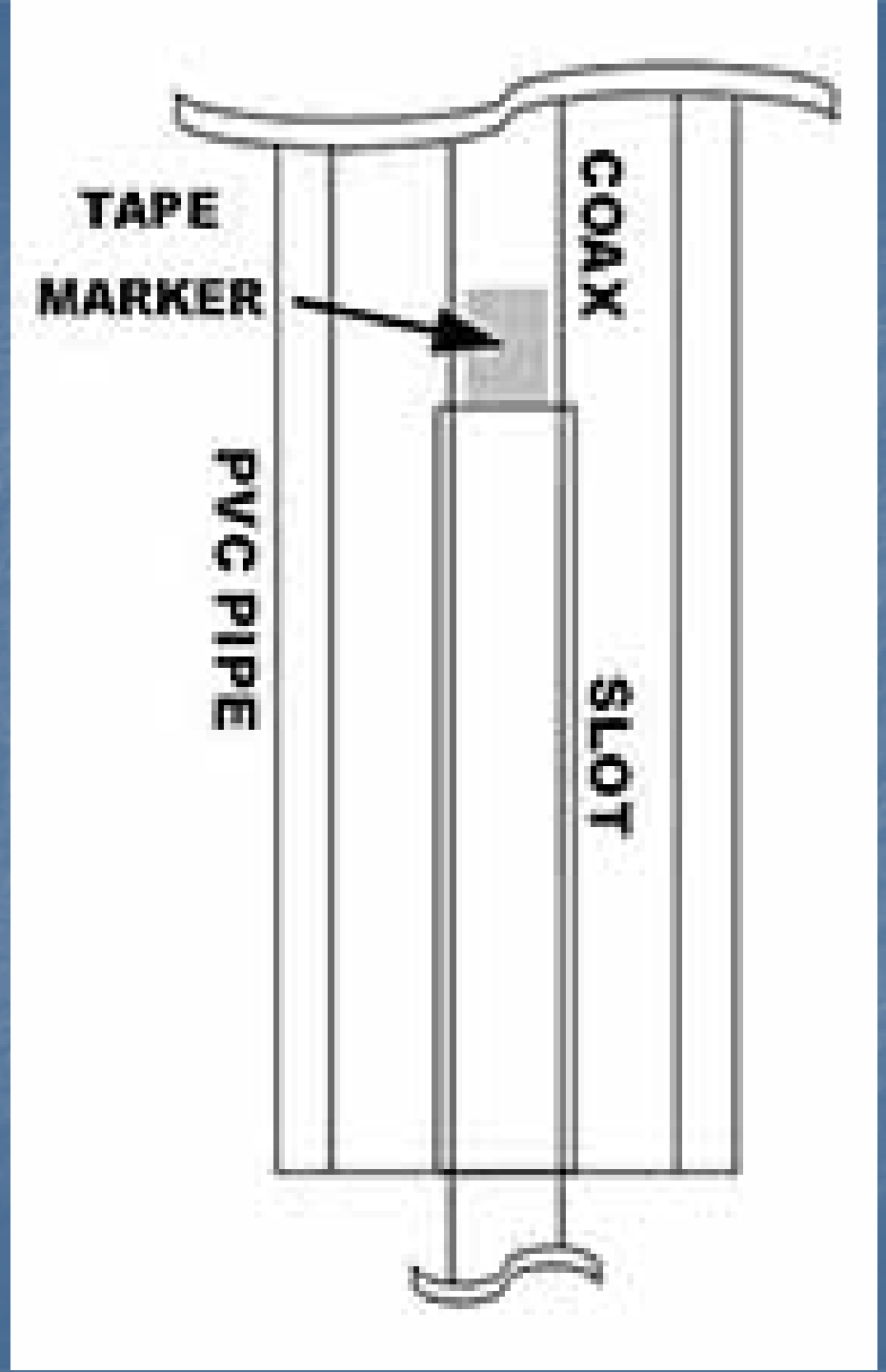
- *Cut a 1¾ in. length of ¾ in. PVC pipe.*
- *Drill ¼ in. holes 1¼ in. apart.*
- *Angle chamfer holes with bit sideways in opposite directions.*

- *Measure 19 in. from the feedpoint and insert the coax into the first hole to that point.*
- *Tightly wind 5 turns in the direction of the chamfer.*
- *Exit at the other hole.*
- *This completes construction as a portable antenna.*

As a Base Station Antenna



- *Cut a 53 in. length of ¾ in. PVC pipe.*
- *Cut a 5/16 x 2¼ in. slot in one side of one end.*
- *Angle chamfer the edges of the slot.*



- *Measure down the coax from the feedpoint and place a small tape marker on the coax, with the bottom edge at 19 in.*

- *2. Insert the antenna into the PVC pipe and position it so that the tape marker is at the top of the slot.*

- *Wind 5 coax turns onto the pipe.*
- *Exit by returning the coax to the inside of the pipe.*
- *Push a ¾ in. PVC pipe coupling onto the end of the pipe to secure the turns of choke. <u>Do not glue</u> the coupling at this time.*
- *Glue a pipe cap to the top of the antenna.*

Final Considerations

Tuning

1. It will be close as built
2. SWR first, then Frequency
3. Monopole ratio → SWR
4. Length → Frequency
5. Glue the coupling

“Hangin” in a Tree”

Double TV Antenna Mast Clamp

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