



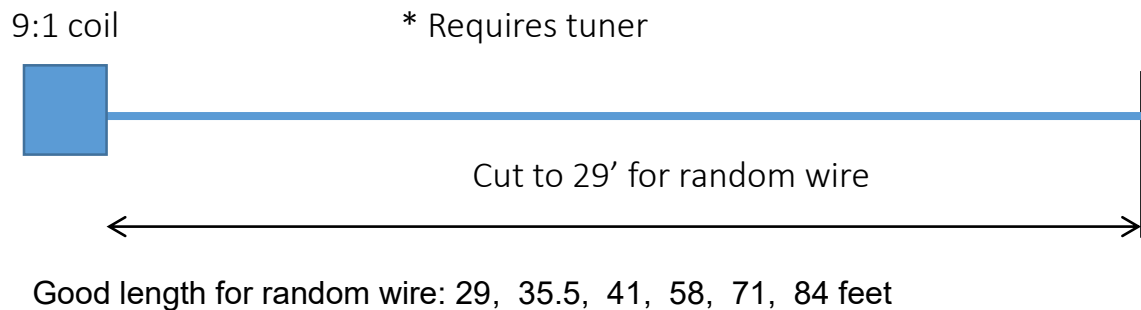
# Owners Manual For The PackTenna Mini

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## Quickstart With The 9:1 Random Wire Version

You can identify this version because it has a yellow shrink wrap on the antenna body.

This version of the antenna is designed for use with an antenna tuner. The 9:1 transformer will bring the antenna's impedance down to a range that a typical tuner can handle. The antenna is supplied with about 40 feet of antenna wire. The wire should be a non-resonant length on any band you plan to operate. We recommend cutting the antenna to about 29 feet. This is a convenient length because it can be run up the entire length of our fiberglass mast and it is not a multiple of a quarter wave on any HF ham band.



- Cut wire to 29' or another non-resonant length

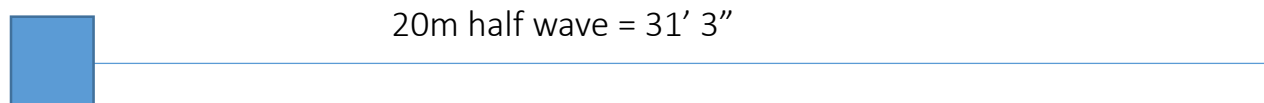
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## Quickstart With The End-Fed $\frac{1}{2}$ Wave Version

You can identify this one because it has a black shrink wrap on the antenna body.

This version of the antenna **MUST BE CUT TO LENGTH** on the band you want to work. This antenna is a tuned half wave antenna on the desired band. The high impedance feedpoint of the end fed half wave requires a high transformation ratio of 50:1 to bring the feedpoint impedance down to 50 ohms. This antenna does not require an antenna tuner.

For 20 meters a good length is about 31' 3". You should trim the wire and check with an antenna analyzer.



- Cut wire to 31' 3" for 20m half wave.

# Overview

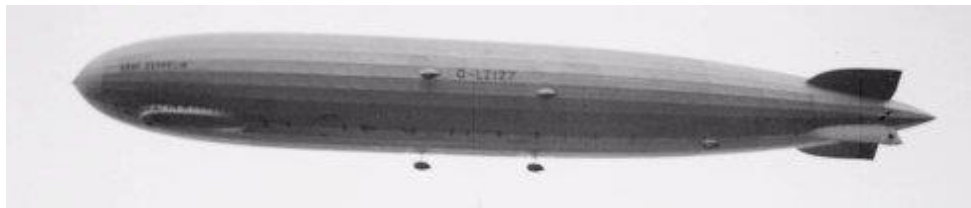
The PackTenna Mini series of compact, trail-friendly wire antennas are designed for backpacking, SOTA, day hiking, camping, travel and any time you want a small HF antenna system that can easily fit into backpack.

The design is a combination wire winder + matching circuit + antenna wire all in one little package you can toss into your backpack. When I operate in the field, I want something that is quick to set up and quick to put away that is also fairly robust. The PackTenna Mini fits the bill.

The antenna wire is 26 AWG copper clad steel wire with a great “silky” jacket. This makes keeps the weight and bulk down while delivering a very strong antenna element.

There are two versions of the “Mini”. There is a 9:1 UNUN version that is designed for use with radios that have an internal antenna tuner, like the KX3. This version would use a length of wire that is not resonant on any band. 29’ works well if you need to keep it short. It also matches up nicely with the PackTenna telescoping mast. With this type of antenna, the feed point impedance is somewhere in the 500 ~ 1500 ohm range depending on the length of wire and the frequency you are operating on. The 9:1 transformer brings the impedance down within the tuning range of the radio’s internal tuner.

The second version of the “Mini” uses a matching transformer with a much higher transformation ratio, around 50:1. This is ideal for an end-fed half wave antenna. Sorta like the trailing wire antennas used in the old air ships but our version is fed with 50 ohm coax.

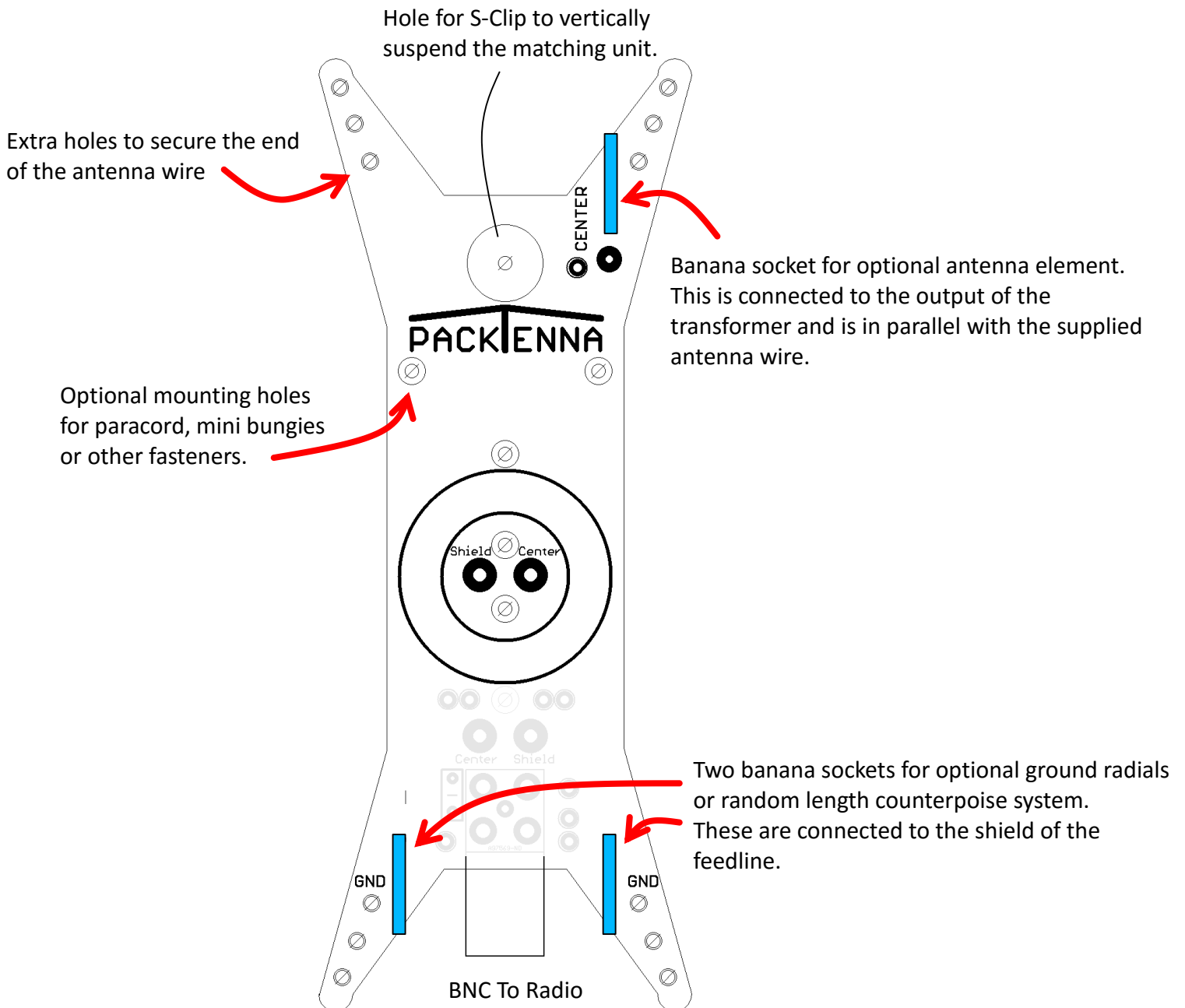


The feedpoint impedance of an end-fed half wave is up in the 3000 ~ 5000 ohm range so the matching transformer needs to have a high ratio to bring it down much closer to 50 ohms. With the end-fed half wave version of the “Mini” and about 31’ of wire, we can get a 1.2:1 or better SWR on 20 meters without an antenna tuner ! It is also fairly broadband since it’s a full size antenna. You can make it work on any band with the right length of antenna wire.

# Additional Connections

Like the other feedpoints in the PackTenna family, the PackTenna Mini includes extra connection points for antenna elements and a counterpoise system.

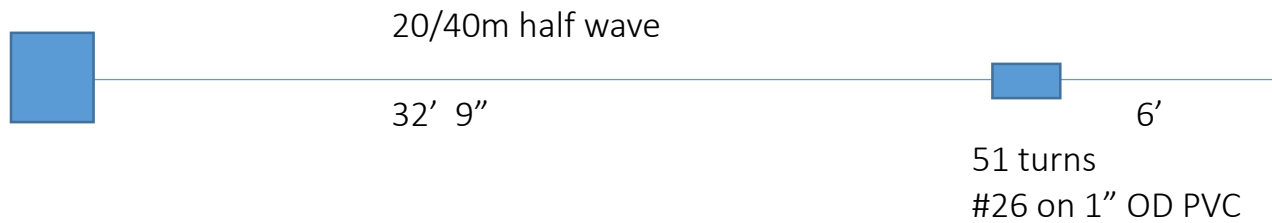
While no extra ground or counterpoise is typically required when running at low power, it is generally recommended to add a counterpoise to ensure a better match and keep common mode currents from flowing back to the radio along the outside of the coax cable's shield.



# Homebrewing a Multi-Band ½ Wave Antenna

With the end-fed half wave version of the PackTenna Mini you can make it a multiband antenna by adding a loading coil toward the end of the wire. You can use a 3" piece of 1" diameter PVC and about 50 turns of 26 AWG magnet wire. In addition to the coil, you have to add another 5 or 6 feet of wire off the end. This makes the antenna less than 40 feet long and works on both 20 and 40.

You will want to use an antenna analyzer to trim the outer wire segment of the antenna to the proper length looking for the best match.



## Homebrew 40m coil



# Mounting and Support Ideas

Little holes on the PackTenna board give you a convenient place to lace the end of the wire through to keep it from unraveling when you are all packed up. There are multiple holes for paracord or bungee cord if you want to mount it to something. You can also connect a wire element to the top banana jack and use the S-clip as a strain relief or to one of the bottom banana jacks for a ground radial or counterpoise.



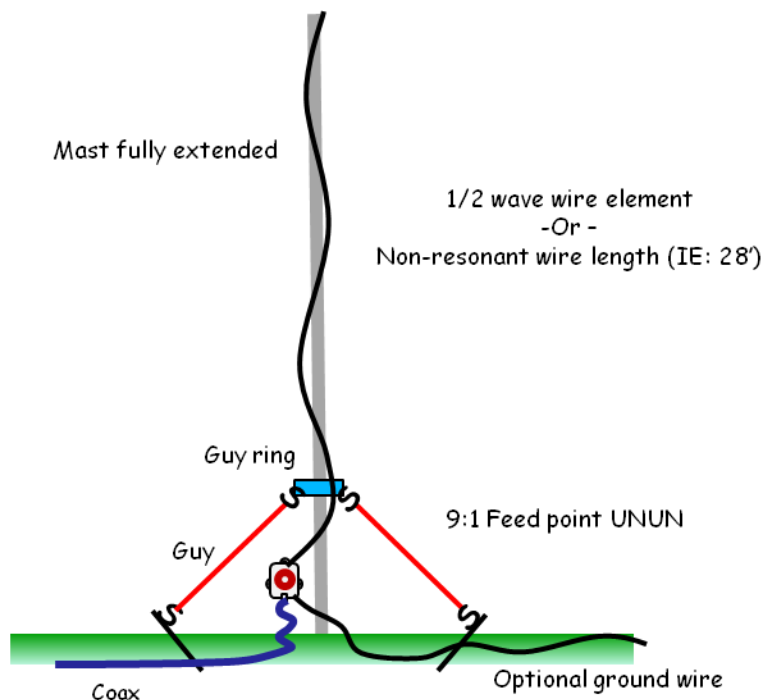
## The Super Useful S-Clip

At the end of the wire element, there is a plastic “S-clip”. This is a super useful gadget because you can thread the antenna wire through a few holes providing a secure connection to the clip and it makes it really easy to trim the antenna length to the perfect length. You can even use these clips for many other things including guy line tensioners. They are a real multi-tasker.





## End-Fed Half Wave



The end-fed half wave or random wire antenna is very popular. This is because it is very quick to set up and take down and because it MUST be used with an antenna tuner, and can work on all bands. When running a non-resonant end-fed wire, make sure the antenna is non resonant on ANY ham band. The following lengths are good: 29' 35.5' 41' 58' 71' because they don't land in a ham band. With the standard PackTenna wire element length of 16' 10", it is a quarter wave on 20m so you will want to add additional wire. We recommend adding 12 feet of wire giving you a length of 29' which is a nice, large radiator and can be supported with a fully extended PackTenna mast.

The impedance of the antenna at the end is high, often between 1000-3000 Ohms, compared to the transmitters expected load of 50 Ohms. These antenna benefit from using a 9:1 UNUN to transform the impedance down to the range that your radio's antenna tuner can match.



