

## **Recommended wire lengths and Installation Notes for Unun models 4932, 4935, 9130, 9132 & 9135**

Thank you for purchasing from **Balun Designs**. Before installing any of the models shown above, please take a moment to read through these Instructions to better understand how each unun ratio should be used.

The following tables show the recommended lengths to use for antenna wire based on the bands you wish to cover. These are based on the use of a sloper configuration with the unun near ground level but final SWR across the HF frequencies **will** vary based on topography, proximity of nearby structures, configuration of the antenna wire and choice of ground or counterpoise.

Installing the antenna wire as an Inverted L will change the feed point impedance due to top loading and may require changing the overall length of the wire for best coverage of all HF bands. Should you decide to install your unun in a high location, the use of a counterpoise wire is required as any long wire run to a ground rod/stake or radial field will inhibit the performance of the installation

Please keep in mind this design is a **compromise antenna** and intended primarily for use by those living in restricted antenna areas or for temporary / emergency installations where simplicity and broad HF coverage is important.

### **Recommended Wire Lengths (in feet) for 9:1 Unun - 160m through 10m**

53	59	72	88.5	98.5	124.5	135	146	162	175
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Values in color are best overall lengths to use for optimum HF spectrum coverage. SWR for all lengths should typically be under 2.2:1 and in most cases will be under 1.8:1 for 160-10m allowing onboard tuners to match the antenna on all bands. Experimenting by slightly changing the wire length (+ or -) is encouraged to provide best overall performance for individual installations.

If you have difficulty obtaining an acceptable SWR on all bands, consider using one of the alternative lengths shown below. These are based on feedback from numerous owners that found these lengths to work better in unusual configurations or with poor soil conductivity.

### **Alternative Lengths (in feet) for both 4:1 and 9:1 ununs - 160m through 10m**

58	71	84	107	119	148	203
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If your need for **band coverage is limited to 40m through 10m**, shorter antenna lengths of 36, 44 and 49 feet may also be used with the 9:1 ratio.

By design, ununs are wound in such a manner that they provide minimal or no RF choking. Although not necessary, a 1:1 isolation/choke balun (models, 1110, 1113, 1115, 1115d etc.) at the **transmitter end** of feedline will stop RF from entering your equipment and reduce receiver noise caused by common mode currents. **Installing a 1:1 choke balun at or near the unun will not allow the coax shield of the feed line to be used as a counterpoise.**

### [Any of the 913x units can be installed using three different methods.](#)

**Ideal:** Sloper configuration with one elevated counterpoise is good but several different length counterpoises maybe better. Length of counterpoise should be a minimum of 30-40 feet but not the same length of the antenna wire. Shorter length counterpoise wires can be used if operation is confined to 40m or higher. Any counterpoise should be at least 1 foot **above ground** running away from or perpendicular to the antenna wire. Do not ground the counterpoise stud when using a counterpoise(s) or radial field. Counterpoise wire(s) close to or laying on the ground will couple and become radials with reduced efficiency.

You may also use the unun with no counterpoise or ground if your feedline is at least 25+ feet long. In this configuration the coax shield will act as your counterpoise and there should be no ground at the unun. With this installation there is a high probability of common mode currents on the shield so a good 1:1 choke balun should be installed in the feedline at or near the point it enters your operating position.

**Good:** Attach counterpoise stud to a radial field of 8 wires minimum, each 10 -20 feet long. Again, more is better and will increase efficiency. Longer length radials are not necessary.

**Workable:** Attach counterpoise stud on unun to a good ground rod at the feed point of the antenna.

### [Wire lengths for the 4:1 ratio in models 4932 and 4935.](#)

Usually any wire length that is non resonant on the band or bands desired will work with the 4:1 ratio. As an example, a 28-31 foot wire will typically allow 40 thru 10 meter coverage and a 43-50 foot wire will provide access to 80 thru 10 meters. Longer wire is always more efficient but is usually best kept under 300 feet as the characteristics of a Beverage antenna begin to show up beyond this length. Always keep the non-resonant length requirement in mind. The same counterpoise, radials or ground as described above for the 9:1 ratio is also required.

### [Installation Notes for all Models](#)

Although the balun enclosure is weatherproof, connectors are not. Please be sure to wrap all coax and wire connections in coax seal or your favorite weather sealant to prevent moisture from seeping in through the openings. To avoid problems caused by corrosion, ring terminals supplied with your unit should be soldered, not just crimped!

Neoprene gasket material for the cover of the grey Carlon enclosures is applied at the factory as a liquid. Consequently the area where the beginning and end overlap becomes thicker when the mixture cures. In many cases you will notice a "bulge" in this material when

the cover is secured. This is normal and does not detract from the integrity of the seal. Please do not trim this material as it will degrade the long term effectiveness of the gasket.

Weep holes are intentionally omitted on most models because the units final mounted orientation is unknown. However, **weep holes are very important** to the longevity of your unun. If they are not installed, weather changes over a period of time can cause condensate to build up inside the enclosure and potentially cause a short or abnormal operation. They may be added by drilling two 1/16th holes at the low point of the enclosure using the balun's final mounted orientation. Holes are usually drilled in the corners or sides, opposite each other, but can be added in any location. Weep holes are installed during production on models where the final orientation is known. Models with weep holes already installed should be mounted with the holes pointing down. If your balun/unun will be used strictly indoors then weep holes are not required.

Do not over tighten the cover of the enclosure. The neoprene gasket under the cover is very effective and will provide the best seal by leaving approximately a 1/16th inch gap (about the thickness of a penny) at the corners under the closing screws. Over tightening the screws can warp the cover causing the middle of the cover's sides to warp upwards. This will create a gap under the seal compromising the weatherproof integrity of the enclosure.

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