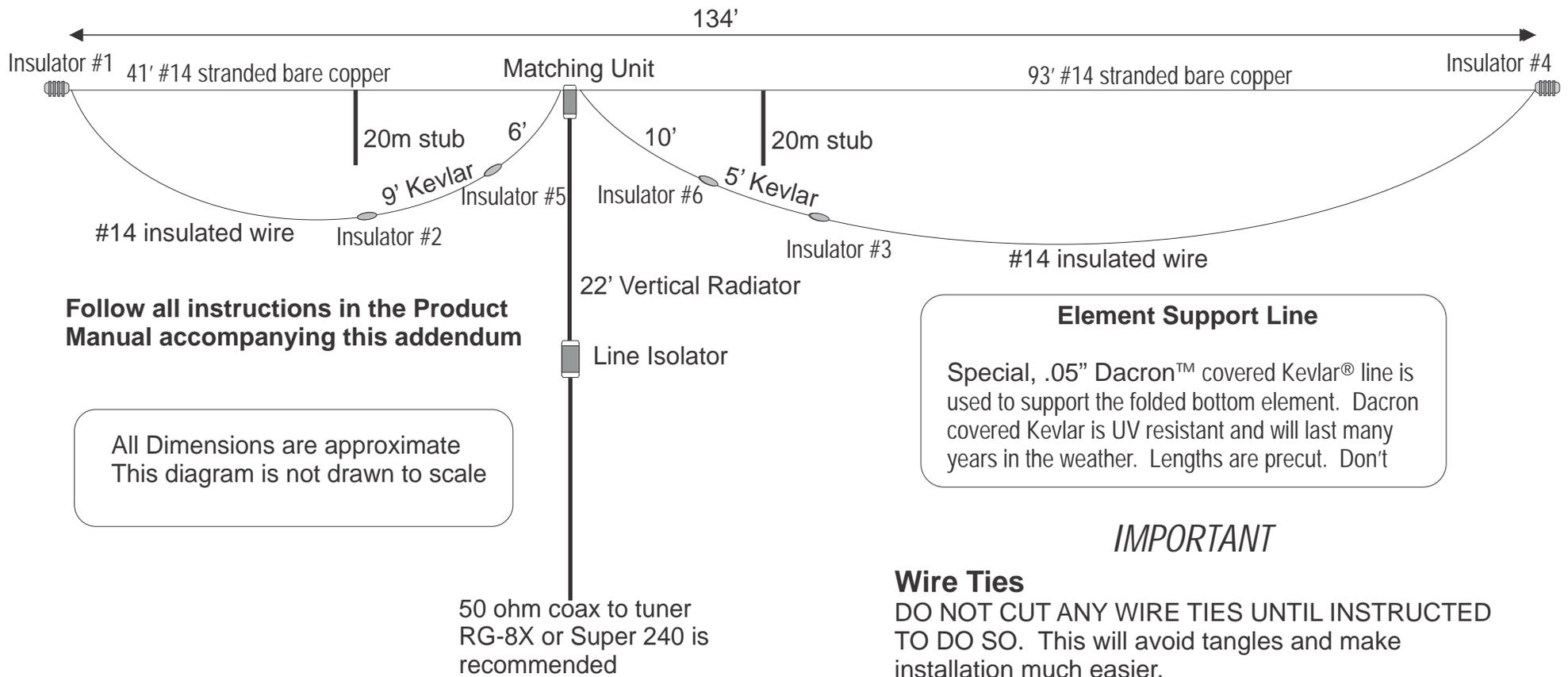


the RADIO WORKS™

CAROLINA WINDOM® 160 Compact™



Caution KEEP ANTENNAS AWAY FROM ELECTRIC UTILITIES.

There are several differences between the CAROLINA WINDOM® 160 and the CAROLINA WINDOM® 160 Compact™. From the diagram on page 1, it is obvious that the new “Compact™” series is much more complex, in that it has 20 meter resonator stubs, a separate 10 meter element, and it’s top elements are folded back toward the matching unit.

Folding the elements shortens the overall length of the antenna dramatically, achieving a nearly 50% length reduction. The dimensions and geometry of the folded element are critical and we have installed insulators #1 and #4 at specific points. *To maintain performance and SWR curves, do not move the insulators.* The droop distance is less critical but for best results, the installation instructions which follow should be followed closely.

Inverted-Vee Configuration

It is best to install the antenna as a flattop, as shown. The CAROLINA WINDOM® Compact™ can be installed as an inverted-V, but the angle between legs must be as large as possible. An inverted-V configuration brings the folded-back ends of the antenna closer together and much closer to the Vertical Radiator. This can alter the tuning and radiation patterns of the antenna. Never use an angle between the top legs of less than 130°. An angle greater than 140° is recommended.

As with all *multiband* antennas, an inverted-V configuration with an angle less than 120° between legs will result in loss of low angle radiation. This effect is not unique to the CAROLINA WINDOM®, but applies to all multiband antennas not operating on their fundamental frequency. Moving the elements closer together results in signal cancellation and alteration of the radiation pattern. Essentially, you lose the low takeoff angles required for the

long propagation paths necessary for DX operation. Keep the angle between legs larger than 140° and this effect will be minimal.

If you must use a smaller angle between legs, add a few feet to the length of the black, Kevlar® line which holds the ends of the main antenna to the 10 meter element and the ends of the folded main elements. This will increase the droop and move the ends of the antenna further from the Vertical Radiator. *Consider 130° between legs to be the absolute minimum* and increase the element end droop as much as possible consistent with an acceptable change in SWR which will result from the change in element geometry.

Sloper configurations are also possible.

Keep the antenna as horizontal as practical so that the Vertical Radiator does not come any closer to the folded elements as necessary. Let the Vertical Radiator hang as vertically as possible.

20 meter Resonator Stubs

One other addition to the CAROLINA WINDOM® Compact™ are the 20 meter stub resonators. These lower the resonant frequency of the antenna on 20 meters which lowers the SWR. 20 meter performance is further enhanced by the addition of the resonator stubs. *Do not modify or eliminate them.*

10 meter element

Because of the wide frequency range of this antenna, 160 - 6 meters, the feedpoint impedance varies dramatically from very low to very high values. The matching unit, in combination with the Line Isolator and Vertical Radiator, are effective in controlling this variation within acceptable limits. However, in the interests of uncompromised 10 meter performance, matching and power handling, a separate 10 meter element is included in this antenna.

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**Read and apply all applicable information which precedes this page.
Review in installation and weatherproofing procedures in the Product Manual.**

- ___ 1. Install antenna support ropes. If possible, use the pulley system described on page 9 of the Product Manual.
- ___ 2. The antenna should be in the clear and far away from anything metal - **ESPECIALLY Power Lines.**
- ___ 3. If a metal center support is to be used (i.e., a tower or mast, see page 17 of the Product Manual for details).
- ___ 4. The antenna should be as straight as possible. Read the information on the previous page for information concerning inverted-V and sloper configurations.
- ___ 5. The configuration and geometry of the antenna should not be changed as far as the location of the insulators is concerned.

**The wire ties are color coded to aid in the installation of the antenna
Cut them as directed in the instructions which follow.**

White wire ties are used at random in conjunction with colored wire ties. They help keep the various parts of the antenna in neat sub-parts. Cut them as necessary to free the wire you are working with.

- ___ 6. Once the support ropes are installed and secured, lay the antenna assembly on the ground and cut the **ORANGE** wire ties to separate the two halves of the antenna. There are two sets of wires connected to the matching unit. The long side of the antenna is identified by yellow wire ties and the short side by red wire ties.
- ___ 7. Cut the WHITE and/or RED wire-ties on the short side of the antenna. You now have two coils of wire. One is made of stranded #14 hard drawn copper and has a short, black insulated wire attached. The second wire is an **insulated** #14 stranded wire. All of the coils are separately held together with WHITE and/or RED wire ties. You will cut other wire ties at the proper time. This avoids wire tangles, so don't cut them before directed.
- ___ 8. Cut the WHITE and/or RED wire ties on the #14 bare, stranded copper wire and uncoil it using a hand over hand motion. *This is important to avoid kinks and tangles.*

*At this time, don't bother unwinding the short, stiff wire located about 16' from the matching unit.
Don't unwind the insulated wire until step #24.*

- ___ 9. Carefully tie your antenna support rope to insulator #1 (see diagram on page 1). This is the insulator closest to the matching unit.
- ___ 10. Cut the **YELLOW** and/or WHITE wire-ties and unwind the long end of the antenna on the ground. Cut the wire ties on the bare copper wire at this time. Follow the instructions in step #8 to unwind the wire.

*At this time, don't bother unwinding the short, stiff wire located about 16'
from the matching unit or the coil of insulated wire.*

- ___ 12. Pull the antenna only a few feet into the air. Carefully remove any kinks and twists in the bare copper antenna wire.
The two coils of Black insulated wire will be hanging from the end insulators. The 20 meter resonator wire (short, insulated, solid wire) and the 10 meter elements wire ties are not cut and the wire is not unwound.
- ___ 13. Cut the WHITE or RED wire ties on the insulated wire on the short end of the antenna. Lay this wire out on the ground using a hand-over-hand motion.
- ___ 14. Pull the antenna into the air so that you can easily reach the matching transformer.
- ___ 15. Apply Coax Seal to the two WHITE WIRES exiting the Matching Unit as directed on page 3 of the Product Manual.
- ___ 16. "Knead" (squeeze and press) the Coax Seal™ again to assure a perfect seal. Make sure it "whets" (sticks) to the case and to the wire.
- ___ 17. You received a length of coaxial cable with two PL-259 connectors installed. This is the "Vertical Radiator." Screw one of the Vertical Radiator's PL-259 connectors onto the Matching Transformer's mating SO-239 connector. Tighten with hard finger-thumb pressure. Apply Coax Seal as shown on page 3 in the Product Manual. Make sure it "whets" to both the coax and the Matching Unit's case.

Do not cover the hole in the bottom of the matching unit's case.

NOTE: Connect the coax so the hole in the bottom of the Line Isolator is pointed down.

- ___ 18. Optionally, cover the Coax Seal with electrical tape (not supplied with the antenna) to keep it clean.
- ___ 19. Cut the WHITE or GREEN wire ties on the short, bare copper wire element (10 meter element) and let it hang. Remove any kinks in the wire.
- ___ 20. Cut the WHITE or GREEN wire ties on the remaining 10 meter element and let it lie on the ground. Remove any kinks in the wire.

You received two short lengths of small diameter, black Dacron® covered Kevlar® line in the package. This type of line should last for many years in the sun. There are two lengths of .05" Kevlar™ line. One is approximately 5 feet long (Red wire tie) and the other is approximately 9 feet long (Yellow wire tie).

The flexible, insulated, #14 stranded wire is used to assure the proper shape and esthetics of the bottom element. There is no load on this wire, so flexibility is the reason why this particular wire type was chosen. It will not kink or tangle like hard-drawn or copper-clad steel wires tend to do.

- ___ 21. Tie insulator #2 to insulator #5 using the 9 foot long Kevlar™ line. (Line with a Yellow wire tie)
- ___ 22. Tie insulator #3 to insulator #6 using the 5 foot long Kevlar™ line. (Line with a Red wire tie)

The lengths of the folded element support line are premeasured, so use the entire length. 6 inches at each end are allotted for tying the knots.

- ___ 23. There are two stiff, #12 black wires. They are attached approximately 16' from the matching unit. *Straighten out these black wires and let them hang vertically from the horizontal wires.* For esthetic reasons, you will want to make these wires as straight as possible. Solid wire is used and once bent, it will keep its shape. The wire is heavy enough to keep it hanging vertically.

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- ___ 24. Pull the antenna further into the air so that the end of the Vertical Radiator is easily reached.
- ___ 25. Screw the remaining PL-259 on the lower end of the Vertical Radiator coaxial cable into one of the SO-239 connectors on the Line Isolator. It doesn't matter which end of the Line Isolator **UNLESS** there is a small drain hole in only one end of the Line Isolator, make sure the hole is toward the ground.
- ___ 26. Attach your coaxial cable to the remaining SO-239 connector on the Line Isolator. Apply Coax Seal to each of the two coaxial connectors on the Line Isolator.

RG-8X or Super 240 coaxial cable is recommended. Super 240 is a low loss, high power version of RG-8X and are available from the RADIO WORKS®. Light weight coaxial cables are recommended because they put less physical stress on the antenna.

- ___ 27. Pull the antenna into the air. Don't Pull the antenna up tight. It performs best when the ends are slightly higher (1 or 2 feet) than the feedpoint.
- ___ 28. Let the Vertical Radiator swing in the "breeze." DO NOT TIE or RESTRAIN IT SO IT CAN'T MOVE. Doing so will cause antenna or connector failure during high winds.
- ___ 29. Before applying power, measure across the PL-259 at the radio end of your coax. You should have resistance reading of about one-ohm. This is normal. If you use an antenna analyzer, you will find a resonance around 1850 kHz +/- 50 KHz. On the higher frequency bands, except for 80 and 20 meters, resonance will occur just above the band limits. On 20 meters, resonance should be about 14.2 MHZ.
- ___ 30. Connect your coax to your tuner and enjoy your new, high performance antenna.