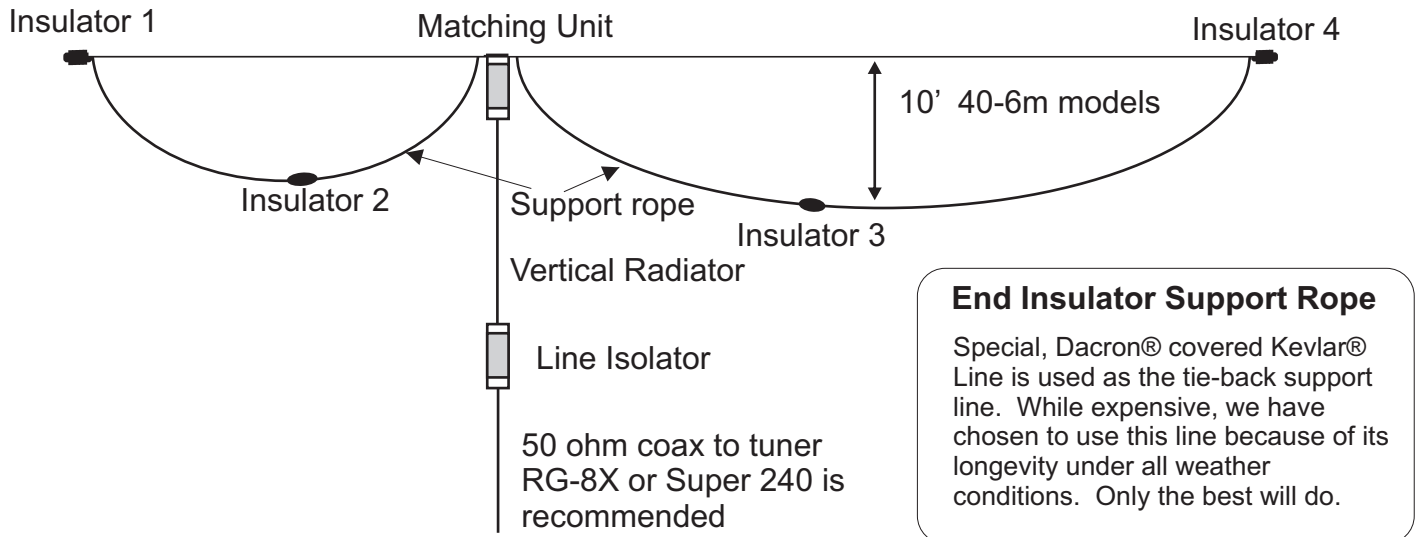


# The RADIO WORKS™ CAROLINA WINDOM® 40 Compact™



There are several differences between the CAROLINA WINDOM® 40 and the CAROLINA WINDOM® Compact 40™. From the diagram above, it is obvious that the new “Compact™” series is much more complex. 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 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 line which holds the ends of the antenna to the matching unit. 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.

**Caution** KEEP ANTENNAS AWAY FROM ELECTRIC UTILITIES.

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. 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 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 only as directed in the instructions which follow.**

- \_\_\_ 6. Once the support ropes are installed and secured, lay the antenna assembly on the ground and cut the **ORANGE** wire ties. There will 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 **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 wire ties. You will cut the white wire ties at the proper time. This avoids wire tangles, so don't cut them before directed.
- \_\_\_ 8. Cut the **WHITE** 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 # 22.
- \_\_\_ 9. Carefully tie your antenna support rope to insulator #1 (see diagram on preceding page). This is the insulator closest to the matching unit.
- \_\_\_ 10. Cut the **YELLOW** wire-ties and unwind the long end of the antenna on the ground. Do not cut the white wire ties at this time. Follow the instructions in step #8 to unwind the wire.
- \_\_\_ 11. Carefully tie your remaining antenna support rope to insulator #4. This is the insulator closest to the matching unit on the long leg of the antenna.
- \_\_\_ 12. Pull the antenna 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.
- \_\_\_ 13. Cut the **WHITE** 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.

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- \_\_\_ 14. Cut the White wire ties on the insulated wire on the long end of the antenna. Lay this wire out on the ground using a hand-over-hand motion.
- \_\_\_ 15. Pull the antenna into the air so that you can easily reach the matching transformer.
- \_\_\_ 16. Apply Coax Seal to the two WHITE WIRES exiting the Matching Unit as directed on page 3 of the Product Manual.
- \_\_\_ 17. "Kneed" (squeeze and press) the Coax Seal™ again to assure a perfect seal. Make sure it "whets" (sticks) to the case and to the wire.
- \_\_\_ 18. 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 Unit's mating SO-239 connector. Tight with hard finger-thumb pressure. Apply Coax Seal as shown on page 3 in the Product Manual. Make sure it "whets" (sticks) to both the coax and the Matching Unit's case.

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

- \_\_\_ 19. Optionally, cover the Coax Seal with electrical tape (not supplied with the antenna) to keep it clean.
- \_\_\_ 20. You received two short lengths of small, black Dacron® covered Kevlar® line in the package. This type of line should last for many years in the sun. It is extremely strong. Each line is approximately 12 feet long, so they are interchangeable. This Kevlar® line holds insulators #2 and #3 to the matching unit, folding the bottom part of the antenna back toward the matching transformer. 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, not strength is the reason this particular wire type was chosen. It will not kink or tangle like high strength wires tend to do.

*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 6 feet long (Red wire tie) and the other is approximately 12 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 one end of each of the Kevlar lines through the empty hole in the #2 and #3 insulators.
- \_\_\_ 22. Tie the other end of each of the black lines through the appropriate eye-bolt on the matching unit. The lengths of the support lines are pre-measured, so use the entire length. The Line with the Red wire tie is the 6' Kevlar line and is used on the short side of the antenna on insulator #2. The Kevlar line with the Yellow wire tie is approximately 12' long and is used on the long side of the antenna on insulator #3.

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

- \_\_\_ 23. Pull the antenna further into the air so that the bottom end of the Vertical Radiator is easily reached.
- \_\_\_ 24. 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.

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- \_\_\_ 25. 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 coax is recommended. Super 240 is a low loss, high power version of RG-8X and is available from the RADIO WORKS®. Light weight coaxial cables are recommended because they put less physical stress on the antenna.
- \_\_\_ 26. 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.
- \_\_\_ 27. 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.
- \_\_\_ 28. 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 7100 kHz +/- 50 KHz. On the higher frequency bands, resonance will occur just above the band limits.
- \_\_\_ 29. Connect your coax to your tuner and enjoy your new, high performance antenna.