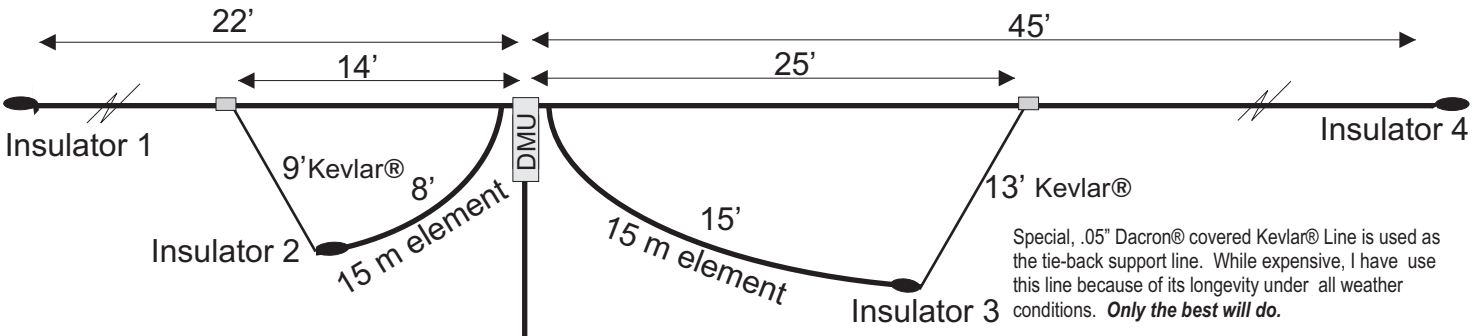
RADIO WORKS™ Off-Center-Fed Dipole
The "OCFD Max™ 40 + 15"



Special, .05" Dacron® covered Kevlar® Line is used as the tie-back support line. While expensive, I have use this line because of its longevity under all weather conditions. ***Only the best will do.***

The 15 m element is supplied only with the OCFD MAX 80 + 15 and the OCFD MAX 40 +15. It is available as a user installed kit for other models

Coaxial Feedline RG-8X or Super 240 is recommended

RADIO WORKS™ OCFD MAX™ 40 + 15 covers
40, 20, 17, 15, 12, 10, 6 m
See website for power rating details

Actual dimensions may be slightly different. Not drawn to scale

1500 w HF 200 w 6 m CW/SSB duty-cycle

There are many versions of the Off-Center-Feed Dipole or OCFD being sold. The RADIO WORKS™ has probably had more experience with this type antenna than anyone. The CAROLINA WINDOM® is the ultimate version of an off-center-fed antenna, and we've been making them for over 25 years. We have sold literally thousands of these marvelous antennas.

I've resisted producing an OCF Dipole for many years because there was really no reason to make them. Just purchase a CAROLINA WINDOM® and you have the ultimate in performance from antennas in this class.

The second reason for not making an OCFD was that I didn't want there to be any connection or confusion between the OCFD and the CAROLINA WINDOM®. They are in no way the same antenna. The only thing they share is the fact that neither is fed at the center like other antennas. The OCFD in incapable of achieving the performance of the CAROLINA WINDOM® and that should be understood to avoid possible disappoint with the Off-Center-Fed dipole. Simply put, the CAROLINA WINDOM® is a high performance, special purpose antenna for those who are interested in generating a strong signal at the low takeoff angles needed for DX and other long distance communications. At the same time, the CAROLINA WINDOM® generates a radiation pattern with moderately high takeoff angles and provides coverage of intermediate propagation paths.

That said, **the OCFD has a important place in your antenna arsenal.** It is an efficient, general purpose, trapless, multiband antenna with a radiation pattern suitable for most operating requirements.
For this application, **I present the RADIO WORKS' OCFD MAX™.** It's different from its rivals, and it works. The most important difference is the high power current balun used for the matching unit. The characteristics of this balun have been optimized for the OCFD MAX™ and provides the best compromise between maintaining a low SWR on each band while providing good feedline isolation and minimal feedline radiation.

Bands Covered

Without introducing major compromises into the design, OCFD antennas work on even harmonics and can be tweaked to work on frequencies near even harmonics. An OCFD will not work well on odd harmonics. This means that 60, 30 and 15 meters are not covered without the use of a wide range antenna tuner (and a willingness to accept the accompanying feedline and other system loss). However, I consider 15 meters to be an important band, so this version of the RADIO WORKS' OCFD MAX™ features a parallel second element tuned for operation on 15 meters. I didn't use a larger 30 meter parallel element because there was too much interaction between the 30 meter element and the main element when working 40 and 20 meters. Perhaps I'll find a reasonable solution in the future and make a kit to retrofit earlier versions of the OCFD MAX™.

15 meter coverage is indicated by the + 15 in the product name. For example, this antenna is the RADIO WORKS™ OCFD MAX 40 + 15 and it covers all HF bands except 60 and 30 meters. Operational bands include 40, 20, 15, 17, 12, 10 and 6 meters. Performance on 15 meters is excellent.

Inverted-Vee Configuration

It is best to install the antenna as a flattop, as shown. The CAROLINA WINDOM® OCFD MAX™ 40 + 15 can be installed as an inverted-V, but the angle between legs must be as large as possible. Never use an angle between legs of less than 120°. An angle greater than 140° is recommended. The 15 meter element will require the larger 140° minimum angle to keep the proper spacing between the legs of the 15 meter radiator.

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 RADIO WORKS® OCFD MAX™ 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.

Bending the Ends to Shorten the Antenna

As with most antennas, you can bend the ends of the OCFD MAX™ downward or outward to reduce the length needed to support your antenna.

CAROLINA WINDOM® OCFD MAX™ 40 + 15 Installation Check List

Caution KEEP ANTENNAS AWAY FROM ELECTRIC UTILITIES.

Review installation and weatherproofing procedures in the Product Manual.

___ 1. Install your antenna support ropes. I recommend using the pulley system described on page 9 of the Product Manual.

___ 2. The antenna should be located 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.

WHITE wire ties are used during assembly of an antenna. Cut them as necessary to carry out a step in the assembly procedure. It's best to cut the WHITE wire ties only as needed. The WHITE wire ties will help prevent wire tangles.

___ 6. Once the support ropes are installed and secured, lay the antenna assembly on the ground and cut the **ORANGE** wire ties.

There are two lengths of small diameter Kevlar line. Set these aside for now.

There will be four coils 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.

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___ 7. Cut the RED wire-ties on bare copper wire. This is the short side of the antenna.

___ 8. Cut any WHITE wire ties on this #14 wire bare copper wire. Uncoil the wire using a hand over hand motion. *This is important to avoid kinks and tangles.*

___ 9. Carefully tie your antenna support rope to insulator #1 (see diagram on page 1).

___ 10. Cut the YELLOW wire-tie(s), and unwind the long end of the #14 antenna on the ground. Cut the WHITE wire ties as necessary. 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 on the end of the long leg of the antenna. (This assumes that the antenna will be supported by its ends. If supported by the matching unit, there is an eye-bolt in the top of the case for that purpose. Modify these instructions accordingly to accommodate supporting the antenna by the Matching Unit.)

___ 12. Pull the antenna a few feet into the air. Carefully remove any kinks and twists in the bare copper antenna wire. *Two coils of Black insulated wire will be hanging from the matching unit.* This is the 15 meter element. (Note: This particular type of insulated wire was chosen for its flexibility and weight. This helps with the shape of the 15 meter element.)

___ 13. Cut the GREEN and RED wire ties on the insulated wire. This is the short side of the 15 meter element. Lay this wire out on the ground using a hand-over-hand motion. Cut any WHITE wire ties as necessary.

___ 14. Cut the Green and Yellow wire ties on the remaining insulated wire. This is the long side of the 15 meter element. Lay this wire out on the ground using a hand-over-hand motion. Cut any WHITE wire ties as necessary.

___ 15. Pull the antenna further into the air so that you can easily reach the Matching Unit.

___ 16. Apply Coax Seal to the two WHITE WIRES exiting the Matching Unit as directed on page 3 of the Product Manual.

___ 17. “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.

___ 18. You now need the two lengths of Kevlar line.

This Kevlar® line holds insulators #2 and #3 to the proper location along the main antenna elements. As mentioned above, heavy, insulated #14 stranded wire is used to assure the proper shape and aesthetics of the 15 meter element. Proper spacing is important for maximum performance. 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. This wire is common, dead-soft, stranded wire that will stretch easily. This wire type is not suitable for other antenna applications where the wire is under stress.

___ 19. The Kevlar line length is critical, so we’ve premeasured it for you. The Kevlar line hanks are color coded.

___ 20.Cut the RED wire tie on the Kevlar hank and tie one end of the Kevlar line through the empty hole in insulator #2. 6” of extra line has been provided for this purpose. The other end of the Kevlar line is attached to the bare copper main element as shown on the next page.

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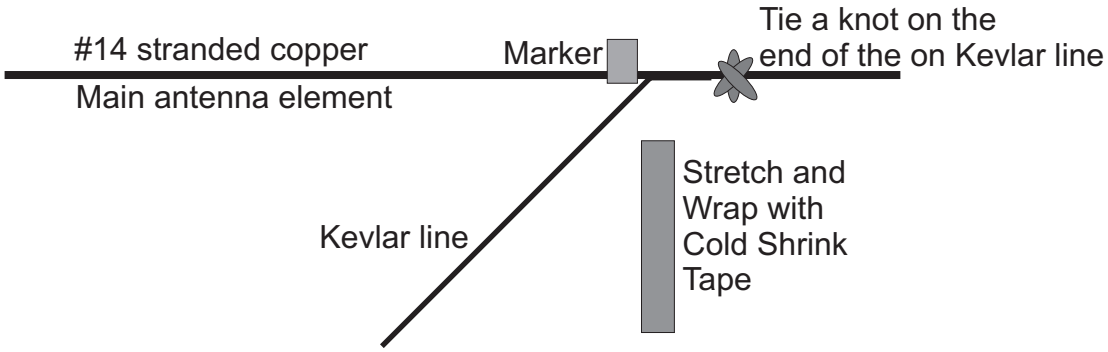

___ 21. **Procedure for attaching the Kevlar Line to the antenna wire**

1. Each of the two main wire elements has a marker (usually a piece of tape) along its length.
   On the long leg, it is about 25' from the current balun
   On the short leg, it is about 14' from the current balun
2. Tie a knot in the end of the Kevlar Line (any bulky knot will do)
3. You received a 4" length of Cold Shrink tape. Pull off the solid plastic layer and discard it.
4. Hold the Kevlar line against the wire element at the marker.
5. Wrap the Cold Shrink tape around the Kevlar Line and the wire element. The knot in the Kevlar can be under the Cold Shrink.
   IMPORTANT - Stretch the Cold Shrink tape as you wind it around the Kevlar and wire. This starts a chemical reaction which will turn the Cold Shrink tape into a solid plastic in about 24 hrs. This holds the end of the Kevlar line securely in place.
6. This wrap should be about two inches long and wrapped tightly around the Kevlar and wire.
7. Repeat 21.1 through 21.6 for the Kevlar line on the opposite leg of the antenna.

___ 22. Screw the PL-259 on the end of your coaxial cable to the SO-239 connector on the matching unit. 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.

___ 23. Pull the antenna into the air. Don't pull the antenna up tight. There is no need to put extra stress on the antenna to gain another foot or two in height. Such a small height change will not result in any improvement in signal strength.

___ 24. Connect your coax to your tuner if you plan to use one and enjoy your new, high performance antenna.

Jim, W4THU