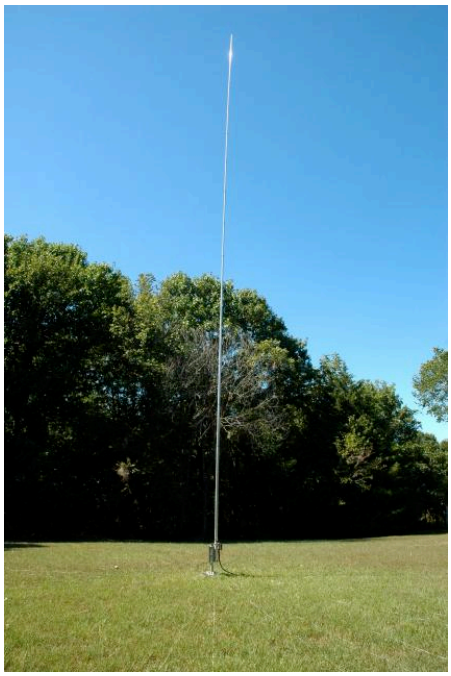
ZEROFIVE-ANTENNAS

43 FOOT 10 THROUGH 160 METER MULTIBAND VERTICAL

INSTALLATION NOTES



Thanks for your purchase of this antenna. We hope that you'll look over the instructions and tips provided before you install the antenna. Taking advantage of this information will help to make your installation easier and much more reliable.

The 43 foot multiband vertical antenna was designed to be a useable single antenna solution for most hams**.** This antenna fills the niche for a multiband vertical that has HF band coverage without lossy traps and tricky adjustments when you install it. The performance varies from band to band when compared to a single band quarter wave vertical for each band it covers, it provides useable transmit coverage from 80 to 10 meters for most types of ham radio use. It also provides good receive coverage on all the bands from 160 to 10 meters including the shortwave broadcast bands and the AM broadcast band here in the United States. It provides the first time top band user with a way to try 160 meters before going to the expense of putting up an antenna dedicated for the band. Good 160 meter antennas aren't cheap!

MOUNTING AND FOLDOVER

The foldover mount that is included with your vertical is designed to mount to a 2 inch OD water pipe, which will have a 1 1/2 inch ID. A 5 foot length will do fine. You can buy this at Home Depot, Lowe's or almost any good hardware store. When driving the pipe in the ground use a block of wood to protect the end of the pipe so it is not deformed. Put 3 1/2 feet in the ground and leave 18 inches above to mount your vertical to.

When cementing the pipe in the ground the hole should be at least 10 inches in diameter and 3 feet deep. Most home improvement stores carry concrete footer forms that can be used to help center the pipe in the hole and make a neater installation. Use a 5 foot length of pipe. Six inches of the pipe will go in the soil in the bottom of the hole. A long bolt through the pipe or a metal piece welded to the pipe and imbedded in the poured concrete will help the mounting pipe stay in place. **In areas where the ground heaves from freezing, make sure your hole is deep enough to reach below the freezing level.** Check with your local home improvement center. They may know what your local building regulations recommend in your area.

When folding the vertical down remove the top gold grade 8 bolt with 3/4 inch box wrenches and slowly walk the vertical down.**The foldover mount has 180 degree rotation, so it will be optimum for most installations.** This normally only takes one person but in cases where the antenna is being lowered in high winds you should have a second person to safely lower it.

When raising this antenna, make slow movements in walking it up into place. Fast or jerky movements could over-stress the tubing and cause one or more sections to fail. Take your time getting the antenna into place and you shouldn't have any problems raising it.

The foldover allows a full 180-degree range. This is perfect when mounting on uneven ground or on top of a hill. Make sure when you install the antenna that it stays well away from any power lines or other wiring when raised or lowered and other obstructions in the lowered position. The antenna should be on the ground, NOT propped up on a building or other obstruction.

Assembly of the vertical

NOTE: Please use caution in tightening the clamps! Over tightening can break the clamps. DO NOT USE POWER TOOLS to tighten the clamps. Hand tools ONLY please! Replacement clamps are available at most hardware and automotive stores if you happen to damage one during installation. Please use stainless steel clamps if you need to replace a damaged clamp. They provide the longest life when exposed to outside weather conditions.

Your multiband vertical comes partially preassembled for shipping from the factory. When putting together the vertical section, Penetrox or OX-guard should be applied to each point where the tubing sections join. The sections should be slid into the next size up to the black mark. This makes a good corrosion free electrical connection that will last for years. DO NOT attempt to lengthen the antenna by reducing the overlap between the sections. You'll weaken the antenna considerably if you try it.

Matching transformer wiring – Two wires are supplied with ring terminals on each end. The positive side of the matching transformer connects to the quarter inch bolt directly above the green insulator. Remove the nut on the end of the bolt and slide the ring terminal over the bolt before re-tightening the nut. This is much easier than completely removing the bolt. Make sure this wire does not contact any other metal other than the two connection points. The negative side of the matching transformer connects to the quarter inch bolt just below the green insulator.

Guying

This vertical is freestanding so no guys are normally needed in most areas. If the antenna is subjected to constant high winds you should consider guying it however. At least two sets of guys are appropriate in areas where the winds are consistently above 30 miles per hour or under conditions of repeated ice loading. It is recommended when very high winds and storms threaten the vertical be folded down for safety if no guys are used.

We have guy collars in different sizes to use with this vertical. Please call us for price and size. Our contact information is available on our web site at http://www.zerofive-antennas.com/.

Radials are required

Your ground radial system is the most important part of vertical antenna performance. When installing ground-mounted radials use radial lengths between 20 and 43 feet, with 43 foot being the choice for best performance. If you have to use shorter length radials, put more down. A good place to start is a minimum of 32 with 120 being the best. When choosing radial wire, #14 insulated stranded wire should be used. You can buy it at Home Depot or most local hardware stores. When installing radials on a ground-mounted vertical, they do not have to be cut to resonance. Only when using elevated radials isolated from ground do the radials need to be cut to length for the various bands. A radial plate should be used and all connections soldered and coated with liquid electrical tape. These are just some guidelines. Just get as many radials down as you can, each as long as you can make it.

NOTE: When using a radial plate with a bulkhead connector, ***do not use the bulkhead connector!*** Run the coax directly to the matching transformer. Experience has shown that the bulkhead connector is a potential failure point in installations that use power levels near the full legal amateur limit especially when exposed to outside weather conditions. If you feel you must use a bulkhead connector on the radial plate then take extra precautions to properly weatherproof the joints. If you experience a problem with the antenna and you are using a bulkhead connector on the radial plate please be sure to check it BEFORE you call us with questions. Bad or corroded bulkhead connectors are our leading cause of problems in high power situations.

RADIAL PLATE

We stock radial plates and related hardware to make your installation as effective as possible. **Please call us for pricing.**

COAX CHOICE

A good low loss coax should be used with this vertical. For runs up to 150 feet, Bury flex or LMR 400 works great. For longer runs or near-legal-limit operation use LMR 600 or ½ inch heliax. Please remember that this antenna system is NOT resonant on any of the amateur bands. As a result, the feed line is operating at a slightly higher than normal SWR most of the time.

If you have to bury the coax cable, make sure the jacket material is rated for direct burial. Otherwise, you might be able to use an old garden hose to burry the coax. Simply run the coax cable inside the hose then bury the hose.

A remote tuner or a matching transformer, what should I use? –

A remote antenna tuner installed at the base of the vertical provides the best match to the coaxial cable and will reduce SWR and power losses in the cable. Unfortunately, if you'll be using power levels above 200 watts or so, the choice of rugged, weather resistant tuners is almost non-

existent. Yes, you can use an automatic tuner built for indoor use outdoors if you install it in a weather resistant housing but it really isn't the ideal way to go.

Another solution for QRO operation is to use a matching transformer at the base of the antenna and put the tuner in the ham station. If you already have a good tuner available, this may be the best solution.

When using a matching transformer, there are 2 options for different types of operation.

The 4 to 1 unun

The 4 to 1 unun should be used when operating this vertical on 10 through 80 meters only, where more performance is desired. 160 meters will not tune using this transformer.

The 4 to 1 current Balun

The 4 to 1 current balun allows broadband operation on 10 through 160 meters where standard performance is desired.

We supply a mounting plate for a matching transformer with your vertical. If used, you can fold the antenna down without disconnecting the wires between the matching transformer and the antenna. With a bit of planning you can set up your antenna so that you do not need to disconnect the feedline, radials or matching transformer to antenna connection to fold the antenna down.

We can supply you with the proper matching transformer for your application. Please call for pricing.

ANTENNA TUNERS

A good quality antenna tuner should be used with this vertical. **The Palstar AT-2K is the tuner of choice.** Most rigs with built in antenna tuners should have no problem with matching this vertical on 80 to 10 meters if the radio power only will be used. Internal tuners in some radios may only provide a match over a narrow range on 160 meters. If your tuner is in the ham shack and doesn't match the antenna on a particular band, try adding 10 to 25 feet of coax on the station end using a barrel connector and try matching again. Sometimes, certain lengths of coax cable will cause an antenna to not match on one or more bands. This is function of the length of the coax cable NOT a design defect in the antenna itself. See almost any ARRL Antenna Book for a discussion of feed line lengths and proper coax use.

Maintenance

One critical piece of maintenance on this antenna is to make sure the weep hole (located a few inches above the green insulator at the base) remains open. This hole allows water (rain) or condensation that builds up on the inside surfaces of the antenna to drain away. **Do not block this hole with electrical tape!** In order to provide the strongest possible joint at the insulator, the insulator is machined to precisely fit into the first tube of the vertical. The fit is tight enough that it is essentially a water resistant joint. Water that builds up in the antenna can freeze in colder climates and damage the antenna so be sure to keep the weep hole clear.

It is also a good idea to examine all the bolts and nuts every three to six months to make sure nothing has worked loose. If your area is subject to frequent high winds examination of the antenna on a more frequent basis is strongly recommended.

Also be sure to keep weeds and tree branches from coming in contact with the vertical portion of the antenna. High voltages are present on the antenna during operation, even at the 100-watt power level.

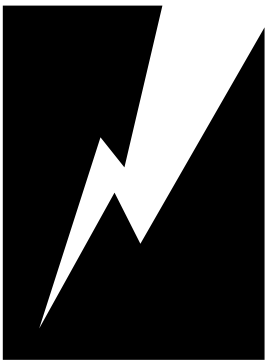
If you use a string type grass trimmer to remove weeds around the base of the antenna be careful that you don't accidentally nick the jacket of the coaxial cable. Damage to the jacket of the coax will let water into the line and reduce the performance of the coax cable leading to the eventual failure of the line. A length of old garden hose can be used at installation time as a shield for the coaxial cable to prevent string trimmer damage.

Now the legal stuff…

We all know that this sort of stuff is common sense but our lawyer is totally without humor and made us put this in anyway.

This antenna should NOT be installed where it may come in contact with power or telecommunications lines either during installation or potential failure. Make sure that it is installed well away from other objects such as buildings with metal siding, telephone and power poles and power lines. Also, take into account where it may fall if it is taken down by high winds or icing.

Please remember that, under most operating conditions, this antenna may have harmful voltages on the vertical mast even under low power conditions. We suggest the protection of a fence, wood or other non-conducting material of course, around this antenna to prevent contact by people or pets. As a temporary measure, plastic snow fencing and some wooden doweling makes a useable fence to keep people and pets away from the antenna. The fence should be located at least 4 feet away from the antenna.



DO NOT ATTEMPT TO LOWER THE ANTENNA IF A THUNDERSTORM IS ALREADY UNDER WAY. If you can hear the thunder then the lightning is close enough to strike. It isn't a good idea to grab onto a 43 foot lightning rod!

Radials may be a hazard when using a lawn mower. Burying the radials is suggested to prevent damage to either the radials or lawn mowers.bPlease check for any regulations that may apply in your area. A visit to your local home improvement center may provide some clues or information sheets about the regulations or at least who to contact in your area to check.