

WA1ZYX / KA1QFA/KB1QPC

WQKQ332

DB-212 Folded Dipole

Mods By:

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This page describes what needs to be done to modify a DB Products DB-212 folded dipole antenna only, not the cable harness if there is one. These antennas were a favorite among the paging industry for their lo-band operations, primarily in the 43 Mhz range. This mod will only cover the conversion to the 50 Mhz band.

With all the changes over to higher frequencies, these antennas are now finding their way into the surplus market and we hams love 'em for 6 meter work. They're rugged, reliable, and more than likely FREE just for the asking. As long as you know who to ask - but please, don't ask me!

The antenna itself is constructed of 3 different diameters of aluminum tubing, one sliding into the next, tuned to the paging company frequency and then riveted and "dimpled" in place. The largest diameter tubing on the side furthest from the mounting structure, that extends from the center mount is actually one solid piece strictly for physical strength. It will be screwed (mounted) to the center mount.

We will be working with the smallest diameter tubing that makes up the trombone end of the antenna.

Drill out the rivets that are about 4 inches from where the smallest diameter and the next section of tubing join. Also drill out the dimples very close to the end of the tubing near the rivets. There will probably be 3 dimples at each junction. Do this at all 4 junctions. (4 rivets and 12 dimples)

At this point, the trombone should slide. If it doesn't, you may need to loosen the plastic spacer near the largest diameter and the middle diameter tubing. Also a little penetrating or cutting oil might not hurt to break up the oxidation.

Once the trombone will slide, remove it - pull it right out. Now use a hacksaw and cut a slit lengthwise in the tubing where you drilled out the dimples about 2 inches deep. I usually make the cut go through the holes left by where the dimples were.

You will need some stainless steel hose clamps to re-secure the trombone after you re-insert it into the slotted end of the tubing. Remember to slide the hose clamps over the tubing BEFORE you re-insert the trombone!

Now to determine the length. Using the standard formula: 468 / freq in Mhz, will give you the length in feet. Multiply your result by 12 and you will now have a pretty good beginning point in inches for the length of each element as measured from the center (mount) to the end of the trombone.

You will need to make final adjustments using Mr. Bird - or some other type of SWR measuring device or analyzer. However you will now be in the ball park.

Use the link below for a very handy page to do all the math for you. Just remember the results will be in FEET and you need INCHES. Frequency to length <u>Conversion</u> page written by W4RLD.

Thanks to Bill, N4LG for sending along the below image on the measurements and cables needed to construct a new harness. According to Bill, after a fairly lengthy conversation with a DB engineer and a few feet of RG-83, 35 Ohm cable, he was able to build this harness.



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A few things we have learned about the DB 212 antennas:

The length of coax between the antennas and the tee can be any length, just as long as they are equal.

The highest gain is about .95 wavelength center to center, but is close between 0.8 and 1.2 wavelength, with not much further degradation way over 1.2 wavelength. (see ARRL Antenna Handbook under collinear arrays for graph)

It is important not to be just under a guy wire. Any metal that the antenna sees as vertical needs to be at least 1/4 wavelength away, and will affect the gain pattern.

The tower or mast must be non-resonant and extend at least 1/4 wave above and below the antennas.

These antennas couple half of the RF into the tower or mast, so any loose metal attached anywhere on the tower, or feedlines often will cause duplex "scratchies".

If at all possible, use the existing VB-8 coax as it is extremely durable to weather, UV, and water penetration.Do not use coax with braided center conductor, or non-flooded shield braid, or water will get in.

The VB-8 and VB-83 35 ohm coax are made by Times Wire , Wallingford, Ct., for DB products. They may still be available from Tessco, and possibly if you get the right person at Times Wire.

To get the optimum length of the 1/4 matching section of VB-83, attach a 50 ohm load to each end of the tee that is to be used, (any length), fasten the 1/4 section the way it will be, and add a random non-1/4 wave of 50 ohm coax between it and an antenna bridge. It may take a few attempts to get the correct length for 1:1 SWR, at the antenna freq., then attach the antennas.

DB Vapowrap or similar putty type coax seal, covered by Scotch 88 tape is probably the best way to keep water out of the tee, which is a difficult job.

Soldering the flooded braid is difficult, but definitely possible if the copper is a shiny bright. Silver plated PL-259 or silver plated PL-259 style N males work well. Clamp type N connectors are mechanically weak. The VB-83 takes a 9913 sized center pin.

Wrapping the elements with vinyl tape, to reduce precip static, and the addition of a 1/8 inch water drain hole at the very bottom of the lower element is probably a good idea.

Use conductive Noalox, or Penetrox, etc, in the antenna tubing joints, especially if they are exposed and hose clamped. W1GPO



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