TUNING THE 2M-4 SERIES, 5/8-WAVE 2-METER ANTENNA'S

Compliments of Firestik® Antenna Company Technical Support Team

Unlike the "TM" series 10-meter antennas and the 1/4-wave "2M15" series 2-meter antennas, the 2M-4 antennas do not incorporate our tunable-tip design. The reason being is twofold. First of all, the antenna's design (5/8 wave) offers a far greater bandwidth than the smaller 1/4-wave antennas. This limits the effective adjustment range of the tuning screw. Secondly, the basic design of the antenna allows it to be "cut" to frequencies well beyond the upper 148MHz limit of the 2-meter band.

In order to compensate for the many types of ground plane and possible installation locations, we manufacture and ship the antenna's on the lower edge of the 2-meter band. This is controlled by the physical length of the antenna (remember that as you physically shorten an antenna, the resonant frequency increases). We make the antennas long because it is easier to cut them than it is too stretch them. The probability of the antenna "looking" too long on your installation (higher SWR on upper channels as compared to lower channels) is well into the 90% range. But, tuning the antenna is very easy.

With the tip in place (yes ... it has some effect on the antenna), measure and record the SWR on the high and low channel. The SWR will no doubt be higher on the upper channel indicating the electrically long condition. So, remove the vinyl rubber tip and use a hacksaw to cut through the covering, wire and fiberglass. Replace the tip and retest. How much you cut off each time will be determined by the variation between the SWR on the low and high channel. Initial cuts should not exceed 1/4" (6mm). Keep in mind that the closer the SWR becomes at the two ends of the band, the less you'll want to cut. Your ultimate goal, in order to maximize performance over the desired bandwidth, is to get the SWR on the low and high channel to be the same. SWR readings below 2.0:1 on all useable channels are generally accepted as being within reason. When tuned in this manner, you will find the SWR in the center of the band to be very low (because you established it as the desired resonant point of the antenna).

You need to be careful and not over cut the antenna because you cannot reattach (very easily) excess amounts removed. Nonetheless, if you happen to over-tune the antenna (or have a rare condition that makes a stock antenna appear to be short on your installation) you can recapture all or most of the error by adding a spring and/or quick disconnect to the bottom of the antenna. Adding an accessory may require additional tuning to compensate for the additional length.