

Aerial-51

Model 404-UL

7-Band, 200w

Asymmetrical Inverted-V

40 / 20 / 15 / 10 / 6m

(plus 17/12m with antenna tuner)

Instruction Manual

V.1.0

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CONTENTS

Page

- DESCRIPTION 2
- Theory of Operation 2
- Installation 3

DESCRIPTION:

The Aerial-51 Model 404-UL is an ultra-light, **Asymmetrical Inverted-V** - (NOT A DIPOLE). It is purpose designed to be used with Spiderbeam lightweight telescoping fiberglass poles, but may also be used with other types of masts. It covers several bands without an antenna tuner, plus several more with a tuner.

Bands Covered / Power Rating:

- 40m, 20m, 15m, 10m, 6m (SWR < 2.5:1) / 200w SSB/CW
- 17m, 12m (with ATU; SWR < 4:1) / 200w SSB/CW
- 30m (with ATU - SWR abt. 8:1) / Max. 50w SSB/CW

Physical Description:

- Overall Length: Abt. 20,5m (67 ft.)
- Coax Length: Abt. 12m (40 ft.)
- Weight of Antenna: 220 gr. (8 oz.)
- Weight of Coax: 180 gr. (6 oz.)
- Overall Weight: 400 gr. (14 oz.)
- Stainless Steel Hardware
- CQ-534 insulated, stranded Copperweld wire (AWG-26)
- RG-174 HCU coax (lower loss than standard RG-174)

It is an “Inverted-V” antenna - not a Flat Top Dipole.

THEORY OF OPERATION:

The Model 404-UL is a half wavelength long wire antenna on 40m. Though it uses a different feedpoint position, it works similar to a classical OCFD or dual-wire fed Windom. Whereas the original Windom design only covers even harmonic bands, the 404-UL was designed to also cover odd harmonic bands, so it **works great on 15m as well!** The SWR on 6m is also good.

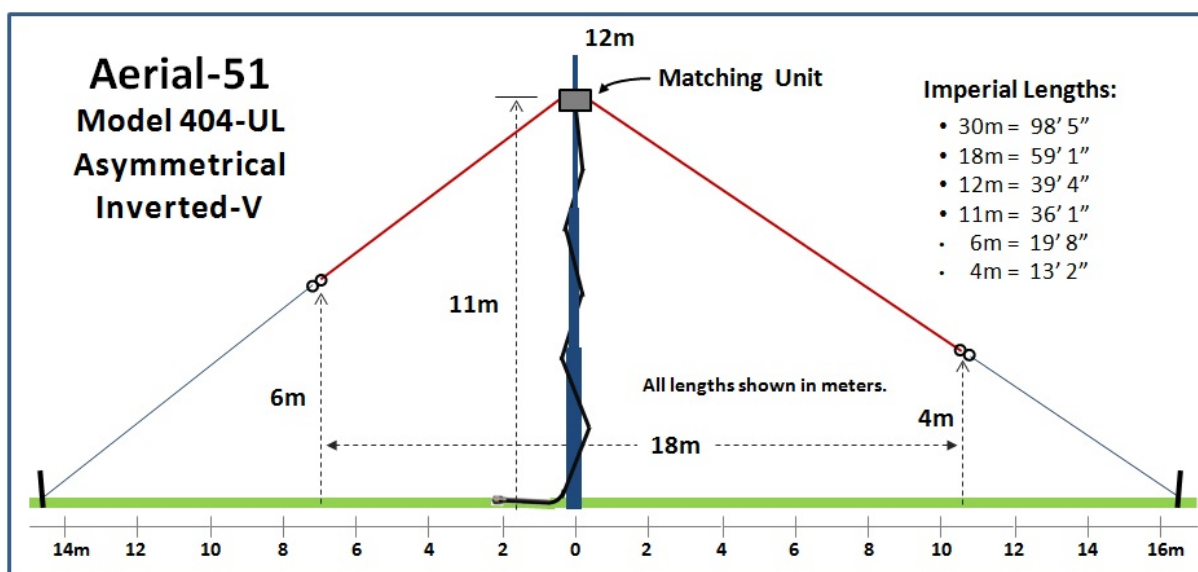
In addition to the classical hf bands (plus 6m), the 404-UL also works great on 17 and 12m. Its SWR is a little high on these two bands, and requires an antenna tuner, but its balun is hefty enough to sustain operations on those bands at the specified power level without damage to the balun.

The SWR is too high on 30m to allow matching with an antenna tuner and running full power. If you must use this antenna on that band, **REDUCE POWER.**

DO NOT ATTEMPT TO RUN MORE THAN 50w ON 30m WITH THIS ANTENNA.

This antenna was designed using ultra-light components. The purpose of an ultra-light antenna is to enable erecting the antenna very high on a lightweight support, thus improving its DX-capability. And that is the simple secret to why this antenna performs well - height.

HEIGHT IS MIGHT!



The Model 404-UL was designed to be mounted high on thin telescoping poles. This is a huge advantage for portable operations. It also enables quick and easy installation by one person.

To enable placing the feedpoint as high as possible on lightweight telescoping poles, thin coax was chosen rather than RG-58, AIRCELL-5 or LMR-240. This helps keep the weight to an absolute minimum.

The additional loss in power of this thin coax compared to RG-58 (12m/40ft.) is about ½ dB on 10m. It is much less on lower bands. We feel the advantage of a higher feedpoint far outweighs the loss of a fraction of a dB.

INSTALLATION:

Due to its ultra-lightweight material, it is strongly recommended to use a center support (i.e. fiberglass pole) with this antenna, and slope its two ends at approximately 45 degree angles to nearby trees, fences, or extended to ground stakes with longer ropes. Lightweight rope is also recommended, such as the Spiderbeam 2mm Kevlar rope.

Of course the Model 404-UL may be used with non-fiberglass poles or masts, such as aluminium, steel, or even wood. Trees also make good center supports if you can keep the legs of the antenna out of the branches. It is important to support the feedpoint;

DO NOT INSTALL IT USING ONLY TWO END SUPPORTS.

THIS COULD DAMAGE YOUR ANTENNA.

When fastening the ends of the antenna to their support (or stake in the ground), there should be a little slack in the line. Do not attempt to pull it tight.

Installation on a Spiderbeam 12m Fiberglass Pole:

When installing the Model 404-UL on a Spiderbeam 12m lightweight fiberglass pole, do not attempt to place the antenna all the way to the top of the pole. The antenna should be fastened at the junction of the top two segments (specifically, at the bottom of the top segment).

DO: Spiral the coax down and around the pole to distribute its weight equally around the pole.

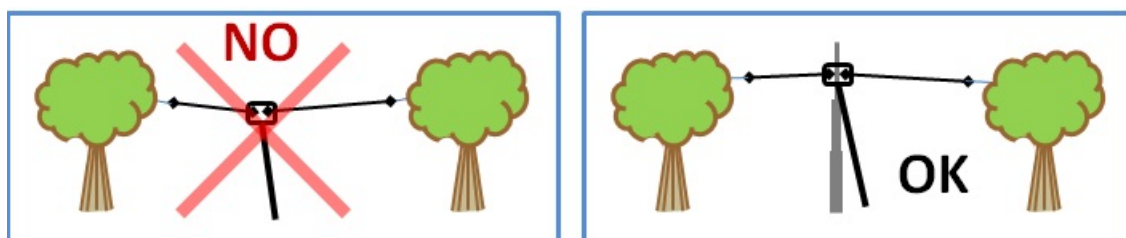
DO NOT: Assemble the entire antenna and pole on the ground then attempt to pivot it into an upright position. Instead strap the collapsed pole to a good object such as fence post or stake in the ground and telescope it up, one segment at a time. If you are using the optional clamp set and guy belt, be sure and insert these over the top of the pole before securing the antenna to the pole.

For temporary operations and when you are certain it will not be a windy day, you may get by without any guy ropes. THIS IS ALWAYS RISKY.

For permanent installations or use on windy days, the pole should be guyed in 4 directions at 7 meters height. This is the bottom of the 8th segment, counting from the bottom.

INSTALLATION ALTERNATIVES:

The antenna may of course be installed as a flat top dipole, but then the feedpoint



and coax should be supported by a pole or tree; otherwise the tension on the wire might break it.

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