



Model

M21T

VHF high band

Whip

144–174 MHz

Field Trim

2.1 dBi Gain

55 cm

- ☞ Tapered stainless steel Type 17-7PH whip with chrome plated ferrule
- ☞ Mounts to any antenna base with 5/16"–26 TPI male thread

INSTALLATION GUIDE

www.zcg.com.au

ANTENNA DESCRIPTION

For the VHF high band range 144 to 174 MHz, this 2.1 dBi gain whip can be mounted to any antenna base with 5/16"–26 TPI thread and trimmed in the field to the desired frequency using an SWR meter.

M21T is tapered stainless steel. To field trim, loosen the grub screw in the chrome plated brass ferrule, remove the whip and trim gradually from the bottom.

A detailed specification sheet is available to download from our website www.zcg.com.au

SELECTING THE MOUNTING POSITION

The whip can be mounted in various positions on a vehicle, or some other fixed location.

To achieve best performance from your antenna, these are the important principles you should consider when selecting the mounting point:

1. **The antenna mounting base will require a metal ground plane for effective performance.**
2. **Mount the antenna in as high a place as possible.**
3. **Mount the antenna as far away from other antennas and metallic objects as possible to avoid interference and distortion of the 360° omnidirectional pattern. At least 350 mm side clearance is desirable, preferably more.**
4. **Mount the antenna vertical, not at an angle.**

IMPORTANT FIELD TUNING NOTES

Because quarter wave antennas will tune differently on differing ground planes and antenna bases, this whip cannot be supplied factory tuned and there is no cutting chart.

The whip must be trimmed to the desired frequency in the field while mounted on the ground plane where it will be actually used.

The approximate length of the whip can be calculated using this formula :

$$\text{Length in mm} = (300,000 \text{ divided by desired frequency MHz}) \times 0.25$$

- ☞ **The result will be a theoretical length only !**
- ☞ **The nature and size of the metal ground plane will make a significant difference to the final tuned length.**
- ☞ **To avoid the possibility of trimming short, ALWAYS START LONGER than the formula indicates and trim back slowly, checking the tune at each step using an SWR meter.**

TUNING GUIDE

1. Install the whip and antenna mounting base in the intended final position. As mentioned, this is most important.
2. Connect the antenna to your SWR meter and the meter to your radio.
3. Set the correct frequency range and power band on the SWR meter.
4. Tune your radio to the desired centre frequency within the 144 to 174 MHz range.
5. Press and hold the transmit button on the microphone of your radio and check the SWR reading on the meter.
6. If SWR is greater than 1.5:1, loosen the grub screw in the whip ferrule to the point where you can remove the stainless steel whip.
7. Trim a short 2 mm length from the bottom of the whip. It is important to trim only short lengths gradually. Then place the whip back in position.
8. Repeat step (5) to check the SWR reading of the meter again.
9. **Repeat this trimming process very gradually until SWR reduces to less than 1.5:1 at the desired frequency. If SWR dips and then starts to rise, trim no further !**
10. Finally, tighten the grub screw to secure the whip. A thread locking compound is recommended to secure the whip permanently.