

Simple 1/4 Wave 2m Mobile Aerial

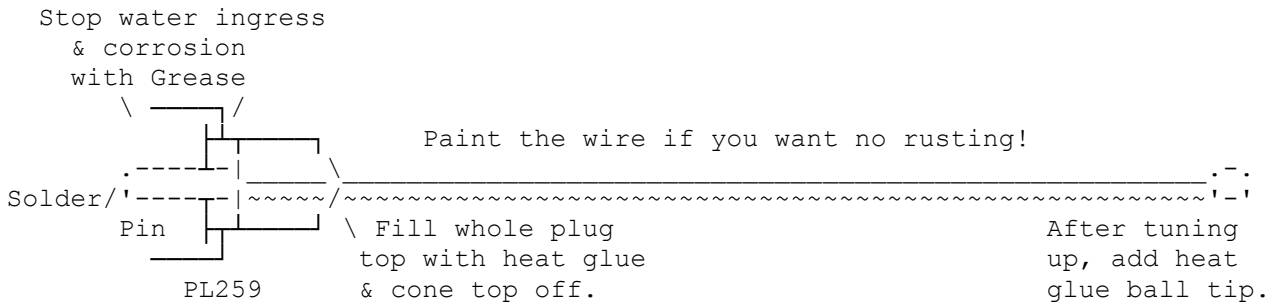
By G8MNY

(Update Oct 07)

This is the simplest aerial always to have in the car as a spare. It works on both 2m & 70cms. Although it is a 3/4 wave length on 70cms, 2 of those 1/4 waves are in opposite phase, so giving only the gain of a 1/4 wave. As it is just a coat hanger it can be bent out of the way & straightened as needed.

CONSTRUCTION

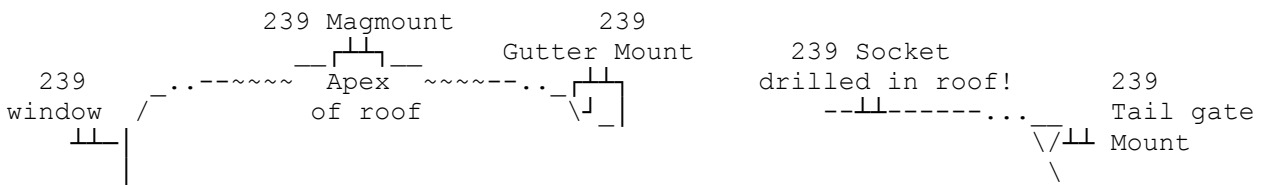
It is made from, "Coat Hanger Wire" or similar fencing wire. soldered into a standard PL259 plug. You will need a piece of wire at least 23" (58cm) long to allow for trimming & the plug. (Tuned approx 20" (51cm) free from the plug)



To solder to galvanised steel is straight forward with some solder fluxes, if not with yours you will have file the wire to provide keys for the solder to grip the wire. If using stainless steel wire rod, heavy cross keying with a hacksaw will be needed to achieve any physical grip with normal solder.

MOUNTING

Before you attempt tuning up the mounting & location is often critical for a good SWR.



So choose the best option for you. Remember there are low garages/car parks to enter, but also you gain about 6dB more Tx & Rx signal, for each doubling in height!

Note that ideally the mount should make a good electrical connection to the car body, but often the close fittings give high enough capacitance to work OK, like in the magmount example. If a non metal body then use a 1/4 wave ground plane in wire, or stick on conductive foil such as alarm tape.

Magmounts have thin rubber undersides to grip the body & they DO NOT SCRATCH PAINTWORK, but dirt on the paint does, so make sure the rubber & bodywork are clean first. Adding a plastic layer under the magmount often reduces the grounding capacitance & permits mounting sliding!

TUNING UP

Start at the lowest frequency & measure the SWR on 2m, then trim a piece off the aerial (say 1/2") remeasure. As long as the SWR is improving reduce the length, & use smaller lengths to cut off. When SWR is OK then test on 70cms it will be far more critical on that band. Test on the centre of 2m band & if SWR is higher trim some more retest 70cms as well.

When done remove aerial & make a bobble of heat glue on the end & rotate aerial to make into a ball over a heat source. Cool off in water. Paint up aerial.

BROADCAST BANDS

The same design works fine for Band 2 FM & Band 3 DAB. Except the length needs to be...

	BAND 2			BAND 3		
Freq MHz	87.5	98	108	217.5	224	230
1/4 cm	86	76.5	69.5	34.5	33.5	32.5

The huge difference in frequency that the aerial has to work over especially on Band 2, & the resultant poorly tuned aerial. This would never do for Tx, but on Rx the slightly lower gain of an off tune aerial attenuates the band noise just as much as the signal, so there is often little difference in practice if the Rx system is sensitive enough to be limited by the band noise. N.B. Rx are 75Ω!

A home cut aerial may not look anything like as good as a shiny commercial chrome one, but usually works much better!

Why Don't U send an interesting bul?

73 De John, G8MNY @ GB7CIP