

# Portable HF Antenna #Q5003



The HF-1 vertical antenna is intended to the used for portable HF amateur operation. It is ideal for Parks and JOTA operations. It contains an earth spike, counterpoise base, counterpoise radials, coaxial base mount, screw together radiator sections, 2.5m telescopic whip and 10m of RG58 coaxial cable terminated with BNC/PL-259 plugs. These components are contained in the carry case which protects them whilst in transit.

Product Component Summary

The counterpoise base has provision for 4 separate counterpoise connections. The antenna is supplied with a single 10 conductor ribbon cable, 5 metres in length.

By separating the ribbon cable conductors, a counterpoise "disk" 10 metres in diameter can be constructed by spacing each conductor 36 degrees apart forming a very effective ground for the antenna. Simple tent pegs can be used to keep the counterpoise radials in place.

Additional radials can be constructed in the same manner, but using commercially available ribbon cable and the 3 spare connecting plugs supplied.

The inductive tuning section allows adjustment from 1.8 to 18Mhz. Above 18Mhz the inductor should be adjusted to the maximum position and the resonant frequency set by adjusting the length of the telescopic whip. Marking the resonant positions for the desired bands can be achieved by the user using a permanent marker (white) or white insulation tape.

In practice, the easiest way to optimize the antenna for operation on a particular frequency, is to connect a receiver tuned to that frequency and adjust the variable inductor for maximum noise (or signal) level using a known net or beacon frequency. Precise final adjustment can be made using an antenna analyser or SWR meter.

The antenna is rated at 150W PEP (100W CW) and has a total length of 4.1metres. An SWR of less than 1.5:1 can be obtained on amateur bands between 5 and 50Mhz. Weight of the entire system is approximately 1.5Kg.

#### 1: Basic Parameters

Frequency	5-50MHZ
SWR	1.5: 1
PEP	CW 100W, SSB 150W
Length	4.1M
Grid length	5M (10pin)
Weight	1.3KG

## 2 : Characteristic diagram of SWR



#### 3: Accessories

Earth spike	1set	
10m RG-58 cable with BNC/PL-259 connectors	1set	
Matching mount (high frequency connector BNC	1pcs	
and PL239)		
Main connecting rod 20MM/450MM	2pcs	
Tuning coil (built-in sliding adjustable inductor)	1pcs	
Pull rod antenna (stainless steel 2.5 m)	1pcs	
Ground cable (4mm banana plug + 5m 10pin)	1pcs	
Banana plug (Spare for additional groundplane)	3pcs	
Protective transit bag	1pcs	

### 4 : Assembly instructions

Ensure that the ground spike and the matching mounting base are reliably connected, and the matching unit is correctly mounted. As shown in the photos, the two connecting rods and the inductive matching section screw together and the telescopic adjustment assembly is connected to the top of the two connecting rods. The banana plug connecting the counterpoise can be connected using any of the holes in the lower section of the mounting base. The assembled antenna is shown in the following photos.



Note that all alloy fittings are surface treated are end conductive, and need to be hand tightened when connecting for reliable operation. Use of a nickel based conductive grease between sections will ensure long term integrity.

#### Antenna adjustment instructions.

Once the antenna has been located in the operating position, the counterpoise can be created. Using the 10 metre long ribbon cable, carefully separate each individual conductor. Using the counterpoise assembly allows for 10 separate ground conductors which can be ideally, separated by 36 degrees to provide 360 degree coverage. These counterpoise conductors can simply lie on the ground or be secured at the end with a small tent peg.

Additional counterpoise assemblies can be manufactured by using commercially available ribbon cable and the 3 spare connecting plugs provided.

The antenna operates as a quarter wavelength radiator at frequencies below 16 Mhz. Adjust the inductive slider for optimum performance on each band.

A basic adjustment can be made by monitoring the receiver noise at the desired frequency whilst adjusting the slider inductor. Use a known beacon or net frequency for best results, then check with an SWR meter for final adjustment.

For operation of frequencies above the 17m band, the tuning inductor becomes redundant, and should be operated at the maximum setting (all the way up).

For operation on these higher bands, adjust the 2.5m telescopic whip to obtain the best SWR.

