

Mad Dog Coils “Pup” – User Guide

High-quality HF antenna loading coil, developed and hand built in Australia by Marty Nelson VK4KC. The Pup is designed and built to be paired with the Chameleon SS17 telescopic whip (or equivalents) and can tune from 40 to 10 meter bands (7 MHz – 30 MHz). The Pup is 3D printed from ASA plastic has sufficient strength to be able to handle the weight and wind loading of the SS17 (17 ft.) telescopic whip. It has a BNC socket feed point, one banana plug socket for radials/ground wires and rocker switch that brings the loading coil in or out of the circuit.

The top and bottom mounting hardware can either be imperial 3/8- 24 TPI UNF or metric 10mm threaded bolts.

Notes:

- When attaching the coil to antenna whips and tripods, etc, do not over tighten. Generally for stationary portable operation finger-tight is suitable.

Setup

There are two suggested ways the antenna can be mounted.

1. The lower bolt can be connected to a ground spike or a tripod that keeps the coil low to the ground (less than 300mm or about a foot). Multiple ground wires (suggest minimum of 5 at 4.5 meters) can be spread out from the ground socket to create a ground plane, or the radials can be bunched up and laid out in one direction. The type ground (soil, rock, sand) below the ground radial wires will have a large effect on how the wires need to be place. Experiment with placement till you get the lowest SWR reading. This configuration provides a reasonable SWR reading (less than 1:2.0) on all bands from 40 to 10 meters.

2. Mount the coil on top of a tripod at a height of 1 to 1.5 metres. Best result using ground radial wires (suggest 4 to 6 at 4.5 meters) that are bunched up in two groups that are laid out 180 degrees (opposite sides) from each other. These can be laid out from the Pup and then over the ground. This configuration also works with the two groups of wires set out at 120 degrees to provide some minor directional gain on the radial side to the antenna. This configuration provides a reasonable SWR reading (less than 1:2.0) on bands from 40 to 17 meters. For 15, 12 and 10 meters an elevated tuned radial wire will be required to get acceptable SWR.

Note: Strong winds can easily cause a tripod to fall over. Care should be taken to anchor or weigh down the tripod to counter the effect of strong winds. With wind speeds greater than 30km/hr (18.6 m/hr) care should be taken and recommend that extendable whips be shortened to handle the wind load.

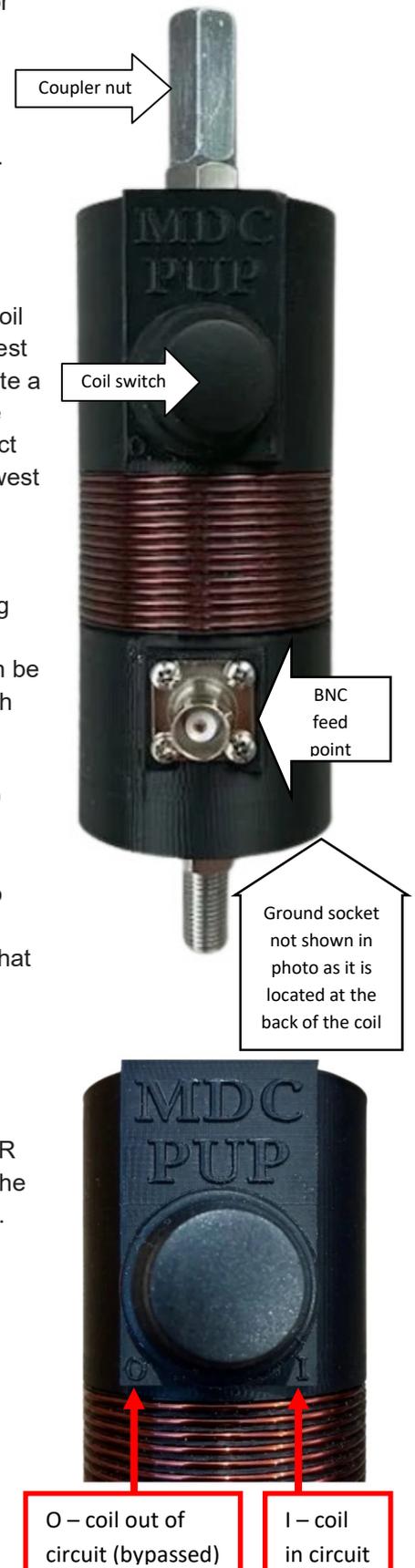
Tuning

Tuning will need to be done each time the coil is setup. Tuning in a specific frequency is done by moving the telescopic whip up or down to achieve best SWR match. To tune the 40 and 30 meter bands the coil will need to be switched into the circuit. For the 20 to 10 meter bands the coil should be switched out of the circuit.

Radial/ground wire placement will mostly affect SWR results. Change the placement / layout of the wires to obtain the best SWR match.

Ground / Radial Wires

With my experiments I commonly used two bunches of 3 wires at 4.5 metres (about 17ft) in length. Each bunch soldered to a banana plug. The banana plugs I use can be plugged into each other. The positioning of the wires (ie. extended,



grouped, spread out, bunched up) will affect the SWR, Impedance and Reactance. Ideally you want to keep SWR as low as possible, certainly below 1:2.0, Impedance close to 50 ohms, and reactance as close to 0 as possible. Experiment to get best results for the location you are setup in.

Power Rating

SSB:100 W

CW: 75 W

AM/FM/Digital: 50 W

Internal Electrical Connections

BNC centre pin connected to lower end of the inductor coil.

BNC ground connected to ground socket.

Upper side of the inductor coil wire is connected to upper bolt/coupler nut.

The lower mounting bolt is not electrically connected to any part of the circuit.

When the switch is set on "Coil out of circuit" the coil is electrically shorted.

Design and Construction

There is nothing new about coils. There are many manufacturers providing similar products. I test MDC coils regularly in the field and have completed over 600 POTA park activations with most of them using Mad Dog Coil products. The Little and Big Dog range of coils are wound on a PVC all threaded former where as the Pup is 3D printed from ASA material. ASA is UV stable and has a very high temperature melting point so it will not warp in hot environments.

The standout features with Mad Dog Coils are:

- Power capability for QRO operation.
- Feed point built into the coil assembly.
- Rigidity and strength.

Specifications

Overall length (including top coupler nut): 175 mm.

Top and bottom bolt/nut hardware is 304 Stainless Steel

Coil diameter: 48 mm.

Coil wire is 1.25mm enamel copper.

Number of turns: 14

Coil inductance: 8.9 uH

Weight (Imperial including upper coupler nut): 0.27 kg

Weight (Metric including upper coupler nut): 0.3 kg

Warranty

Products manufactured and sold by Mad Dog Coils are warranted for 1 year from the date of purchase.

Customer pays for shipping of replacement product.

*** Disclaimer ***

It should be noted that the Mad Dog Coils should only be used in accordance to our specifications and within our stipulated intended use. All details of intended use are detailed in this document that is shipped with the product. We accept no liabilities for such uses outside of our intended use and stipulations. If longer than 17 foot telescopic whips are used (ie. Chameleon SS25) they should not be extended past the 18 foot point.

I hope you get many years of use and enjoyment out of your Mad Dog Coils product.

73' Marty VK4KC the Mad Dog!