Mad Dog Coils – User Guide

The Mad dog coil is a loading coil with a BNC feed point and adjustable collar that slides up and down the coil former to change the coil impedance. The coil needs to be used with an antenna whip/wire connected to the top bolt/coupler along with radial/counterpoise wires which are connected to the ground socket. There are four models:

- **Mad dog coil 40.** This has 72 turns and a 3/8-24 TPI thread at the top.
- **Mad dog coil 40M**. This has 72 turns and a M10 (10mm) thread at the top

  Note : The 40 and 40M models will tune all of the 60 metre band when used with a 5.18 meter (17 ft) whip. The shortest whip possible and still be able to tune the 40 metre band with the collar at the bottom of the coil former is 1.8 metres (6 ft.)

- **Mad dog coil 80.** This has 107 turns and a 3/8-24 TPI thread at the top.
- **Mad dog coil 80M.** This has 107 turns and a M10 (10mm) thread at the top

  Note : The 80 and 80M models will tune all of the 80 metre band when used with a 5.18 meter (17 ft) whip

The lower mounting bolt is fastened to the lower end cap. This end cap can be unscrewed and removed. The 40 or 80 model comes with the 3/8- 24 TPI thread lower mounting bolt. The 40M or 80M model comes with the M10 thread lower mounting bolt. Alternative end caps can be purchased which have difference size bolts.

Notes:

- The upper end cap must not be unscrewed as there is an internal electrical connection from the coil to the bolt.
- 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 four 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 that 300mm or about a foot). Multiple radials wires need to be spread out from the ground socket to create a ground plane. Alternatively, aluminium fly screen mesh rolled out flat and placed under the coil is also a good solution.

2. Mount the coil on top of a tripod
3. Mount the coil on a magnetic base and place on roof of vehicle
4. Mount the coil to a clamp which then can grip to a picnic table or similar

For options 2 – 4 the coil at a height of 1 to 1.5 metres is ideal and counterpoise wires can be placed from the ground socket down onto the ground. Five counterpoise wires with each wire 4.5 m long is very affective. These 5 wires can be soldered to one banana plug making it easy to connect to the ground socket.

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. If the antenna does fall it will most likely be the antenna whip that gets damaged rather than the coil. 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 a for a desired frequency is done using a combination of moving the collar up and down the coil former, or if you have an extendable whip, fine tuning by moving the whip in an out, and counterpoise/radial wire placement. A good SWR reading of 1:1.5 or less should be achievable.

Multiple tuning points
Each coil comes with one collar. The collar is a stainless steel conductor which is designed to be able to slide up and down the coil and will handle wear over time. Additional collars can be used providing quick band changes in the field. When using more than one collar always tune the top collar first to the desired frequency, then insert the second collar below the first collar. Slide the second collar up and down to the desired frequency. Following this pattern a third and fourth collar can be added. Additional collars can be purchased.
Note: When using the 80/80M model tuning for 80 metres will be achieved by using one collar. A second collar can be used for another band but the SWR for 80 metres will be a little high and may require a tuner.

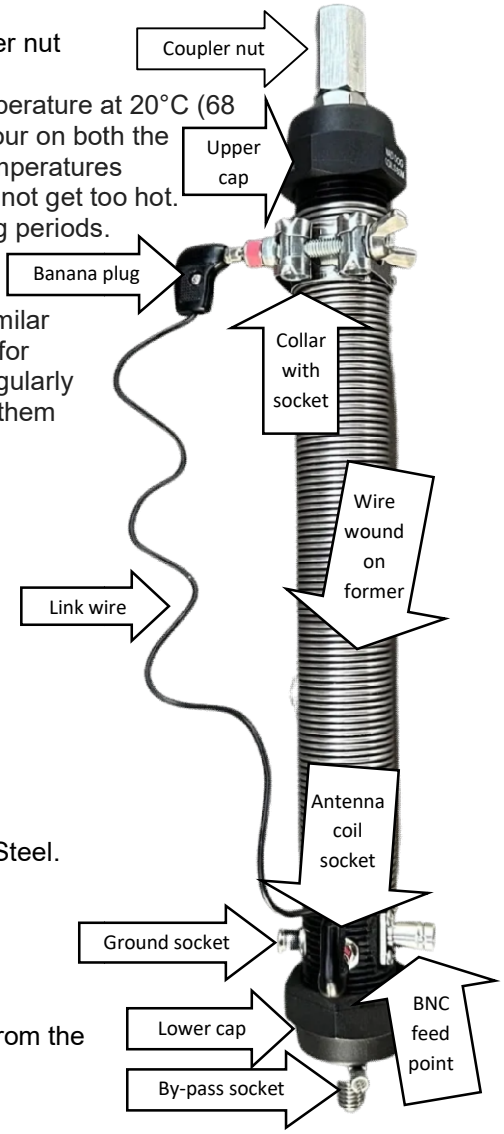
Bypassing the feed point
There may be times when you do not want to use the feed point and desire to bypass it. To do this you need to make an electrical connection from the collar to the ring terminal banana plug socket on the lower end cap (By-pass socket). This will bring the lower bolt into the circuit so that from the lower bolt to the top bolt via the collar you have the coil inductor electrically connected between them, bypassing the feed point.

Antenna whips
Two suggested whips:

- Stainless steel telescopic whip 5.18 meters (17 ft) in length. Using this whip fully extended with the Mad Dog coil 80 or 80M you can tune down to the 80 meter band. Note that the Q is very sharp on 80 metres so fine tune by sliding the coil collar or whip antenna up or down will be required to reach optimal resonance.
- A foldable military whip. These generally don't exceed about 2.8 m, so this is not a good solution if you want to use the 80 meter band.

Power Rating	**Internal Electrical Connections**
SSB:100 W	BNC centre pin connected to antenna coil socket
CW: 75 W	BNC Ground connected to ground socket
AM/FM/Digital: 50 W	Upper former coil wire connected to upper bolt/coupler nut

Note: These power tests were done with the coil in full sunlight, 12 noon, temperature at 20°C (68 Fahrenheit). The digital test was using FT8 continuously calling CQ for one hour on both the 20 meter band and the 40 meter band at 75 W. It is recommended that for temperatures above 20°C that the power be reduced to ensure the stainless steel coil does not get too hot. Also recommended that digital power rating be at 50 W max for long operating periods.



Design and Construction
There is nothing new about coils. There are many manufacturers providing similar products. I have been working on this particular design using irrigation piping for many years, making many prototypes to perfect the design. I test the coils regularly in the field and have completed over 300 POTA park activations with most of them using Mad Dog Coils.

The standout features with Mad Dog Coils are:

- Decent power capability for QRO operation.
- Feed point built into the coil assembly
- Rigidity and strength
- Imperial and metric options
- Ability to add additional collars
- Removable lower coil cap for quick change of mounting hardware.

Specifications
Overall length: 40/40M 320 mm, 80/80M 390 mm.
Coil diameter: 30 mm.
Coil wire along with top and bottom bolt/nut hardware is 304 grade Stainless Steel.
Number of turns: 40/40M – 72, 80/80M - 107
Weight: 40/40m – 0.435kg, 80/80M - 0.515 kg
Coil inductance: 40/40M – 31uH, 80/80M – 46.4uH

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.

When using in Dipole or V-dipole configuration whip length should be no more that 4 metres (13 ft.) and used for temporary deployment (less than 4 hours). Long term setup and with heat on a summers day will bow the PVC plastic former.

I hope you get many years of use and enjoyment out of your Mad Dog Coils product.
73' Marty VK4KC the Mad Dog!