

RECON 40™

User Manual



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IMPORTANT!

READ ALL WARNINGS BEFORE USING THIS PRODUCT.

WARNING: ELECTRICAL SHOCK HAZARD

DO NOT USE NEAR POWER LINES. CONTACT WITH POWER LINES CAN CAUSE AN ELECTRICAL SHOCK. SERIOUS INJURY OR DEATH MAY OCCUR.

WARNING: TIPPING HAZARD

KEEP A WIDE RADIUS AROUND THE ANTENNA CLEAR OF PEOPLE AND OBJECTS. IF THE ANTENNA IS IMPROPERLY DEPLOYED OR IS USED IN WINDY CONDITIONS IT CAN TIP OVER. THIS CAN CAUSE SEVERE INJURY, AND OR PROPERTY DAMAGE.

WARNING: FIRE HAZARD

DO NOT EXCEED THE POWER LIMITS LISTED IN THE SPECIFICATIONS TABLE ON PAGE 1 OF THIS MANUAL. EXCEEDING THE POWER LIMITS CAN RESULT IN A FIRE. EXCEEDING THE POWER LIMITS WILL VOID YOUR WARRANTY.

WARNING: RF EXPOSURE

NEVER OPERATE THIS ANTENNA IN A WAY THAT COULD EXPOSE INDIVIDUALS TO HIGH LEVELS OF RF EXPOSURE, ESPECIALLY ABOVE 10 WATTS OR ABOVE 14 MHZ. NEVER USE THIS ANTENNA NEAR RF SENSITIVE MEDICAL DEVICES, SUCH AS PACEMAKERS.

REZ Antenna Systems™ Recon 40™

Contents:

- (1) Recon 40 Loading Coil Base
- (1) [Z]-QD Radial Puck
- (1) Insulating Mount



Thank you for purchasing your REZ Antenna Systems Recon 40! This manual will familiarize you with how to set up, tune, and perform basic maintenance on your antenna. We take great pride in the build quality of our products, but should you have any issues or questions, please email us at support@rezantenna.com.

We hope you enjoy your new antenna for many years to come!

Overview

The Recon 40 from REZ Antenna Systems is a high-performance HF antenna coil capable of tuning 10-40 meters when paired with the [Z]-17 17-foot telescoping whip. The coil body is made from Delrin and 6061 anodized aluminum all CNC machined in the USA. The coil body is 100% weather resistant thanks to its unique design which incorporates the use of O-rings and gasket seals at each joint. The coil's machined wire groove provides mechanical support and optimal spacing to ensure a low loss coil. Made with 14GA enameled copper wire, the Recon 40 is rated for use at up to 500 watts SSB, 300 watts CW, and 200 watts digital (50% duty cycle).

Switching bands is made easy with the integrated coil bypass switch. When you're ready to move to the higher bands simply flip the switch and tune the telescoping whip to your desired frequency. The Recon 40 also features our rapid-deploy radial system. At the heart of this system is the radial "puck" that accepts up to eight 4mm banana plugs. This enables quick attachment of REZ Antenna Systems' 4 wire radial kit and leaves room to expand your radial field for increased performance.

RECON 40 SPECIFICATIONS	
Length	10"
Max Dia.	2.5"
Material	Delrin, 6061 Aluminum, Clear Acrylic, Enameled 14 GA Copper Wire
Hardware	Stainless Steel
Coax Connector	SO-239
Power Limits	500 Watts SSB, 300 Watts CW, 200 Watts Digital (50% Duty Cycle)

Required Accessories

In order to complete your antenna system you will need a 17 foot telescoping antenna whip, a mounting solution, and a set of radials terminated with a 4mm banana plug. The Recon 40 is offered as a full kit, which includes all of the required accessories or you may purchase them separately.

Below are the recommended products to pair with your Recon 40. These can be purchased directly at RezAntenna.com or through our dealers.



GROUND SPIKE	
Length	17"
Spike Dia.	3/8"
Max Dia.	1"
Material	316 Stainless Steel
Thread Type	3/8-24



[Z]-17 TELESCOPING WHIP	
Length	17'
Material	Stainless Steel
Finish	Black Electroplate
Mounting Thread	3/8-24 Thread Pitch
Collapsed Length	24"



[Z]QD RADIAL KIT	
Wire Length	33' (Set of 4)
Wire	18ga Stranded Copper
Termination	4mm Banana Plug
Wire Management	Silicone wire ties (set of 4)



[Z]-POD	
Height	12 Inches
Footprint	Approx. 30 Inches
Leg Length	18 Inches
Thread Type	3/8-24 Thread

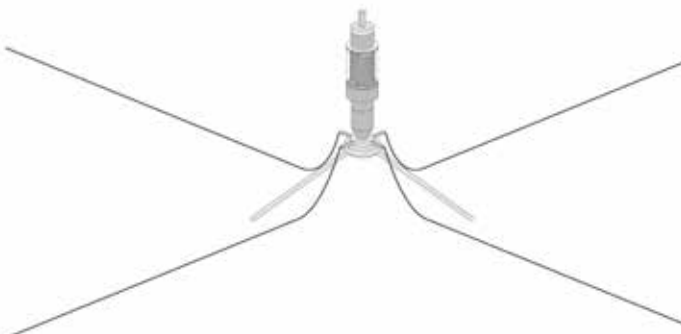
Deployment Configurations

Overview

There are two main ways to deploy the Recon 40: the ground mounted radial configuration and the elevated radial configuration. The following section will cover each one in detail.

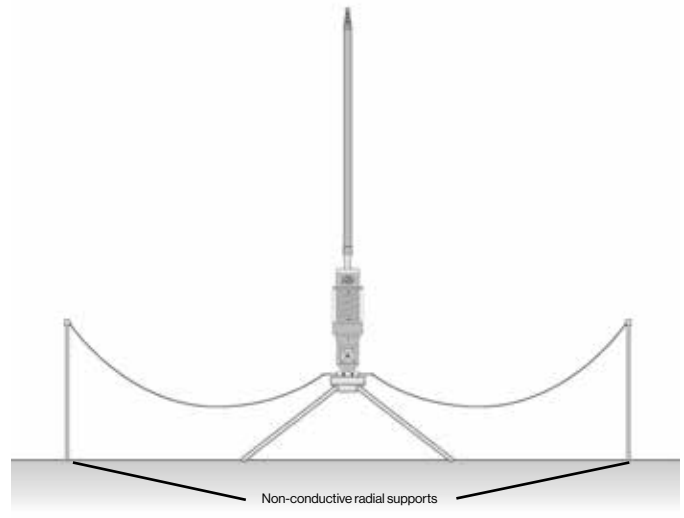
Each one has its advantages over the other. Refer to the diagram and chart below to see these at a glance.

Ground Radials



This drawing is not to scale and is for illustrative purposes only.

Elevated Radials

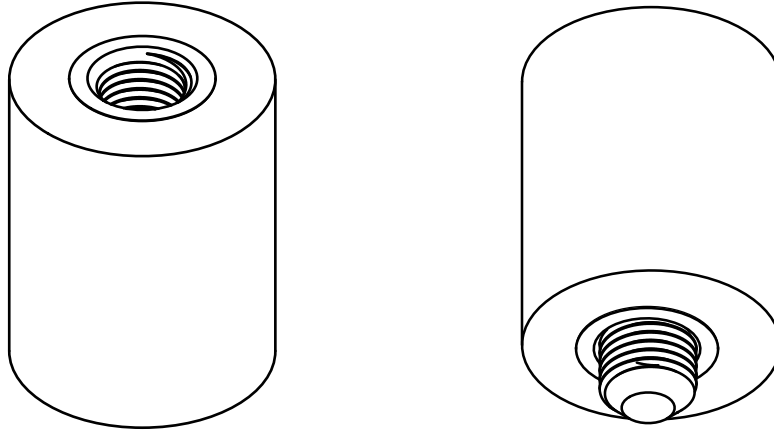


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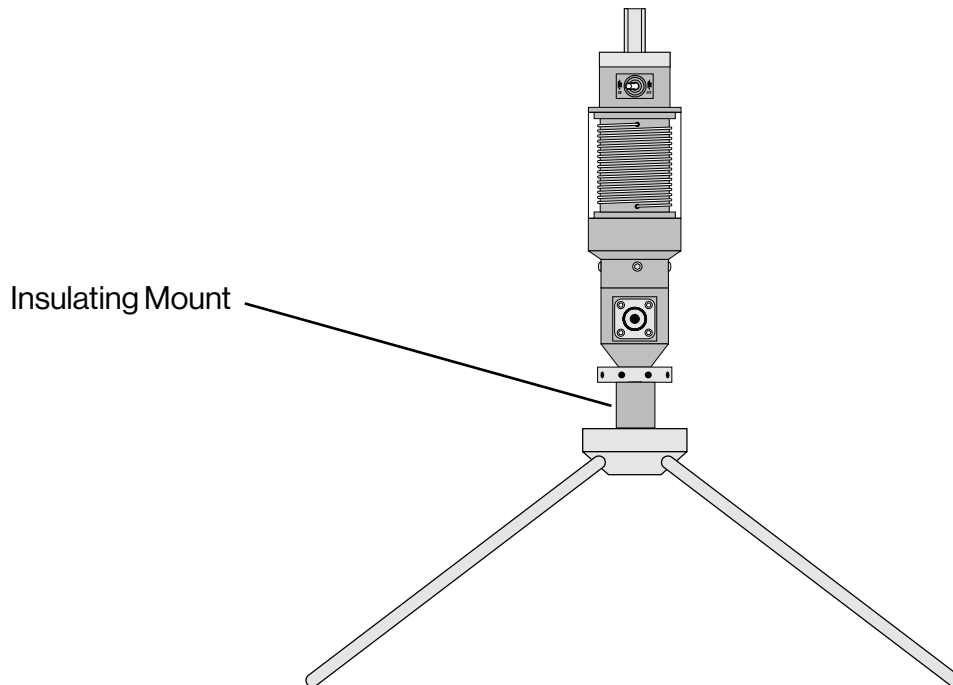
	Elevated Radials	Ground Radials
Performance relative to the number of radials	X	
Deployment speed		X
Ease of tuning		X

Deployment Configurations

Using the Insulating Mount



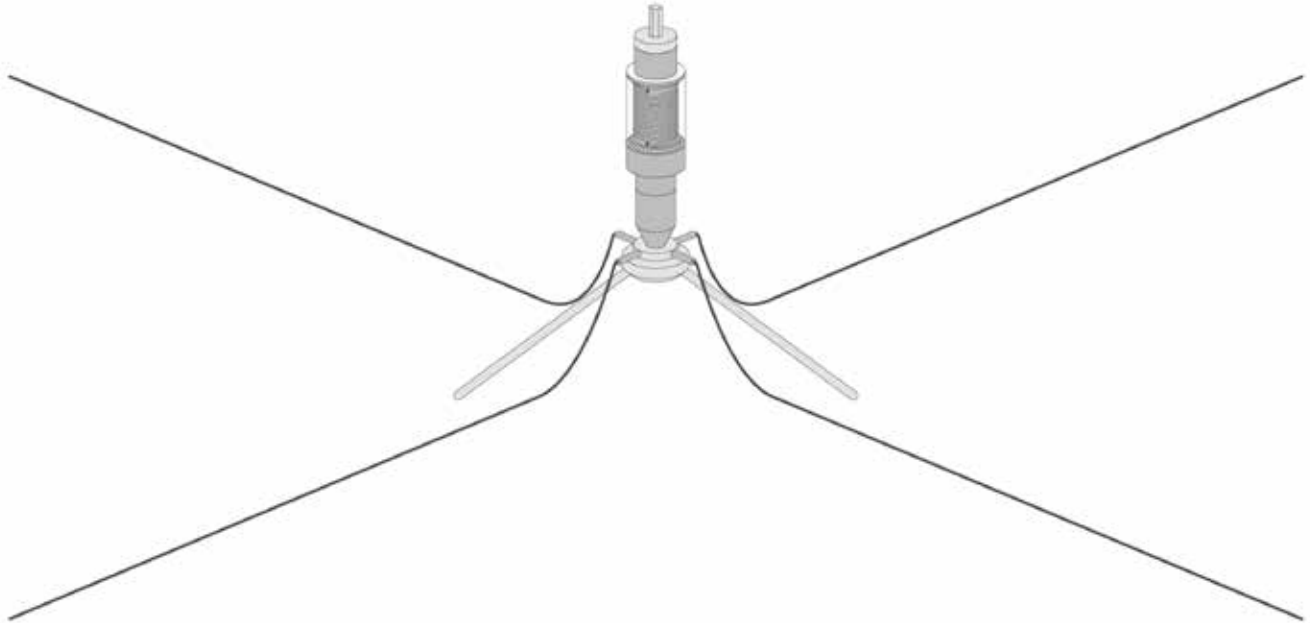
Supplied with your Recon 40 is a plastic insulating mount. The purpose of this mount is to electrically isolate the antenna from the mounting point. Depending on the mount used, it can affect the tuning of the antenna. This is because the mounting stud is electrically connected to the ground side of the system. Using the insulating mount ensures only the radials attached are active in the ground system.



Regardless of the radial configuration, it is recommended to use the supplied insulating mount. In order to use the mount, place it between the base of the Recon 40 and its mount as shown.

Deployment Configurations

Ground Level Radials



This drawing is not to scale and is for illustrative purposes only.

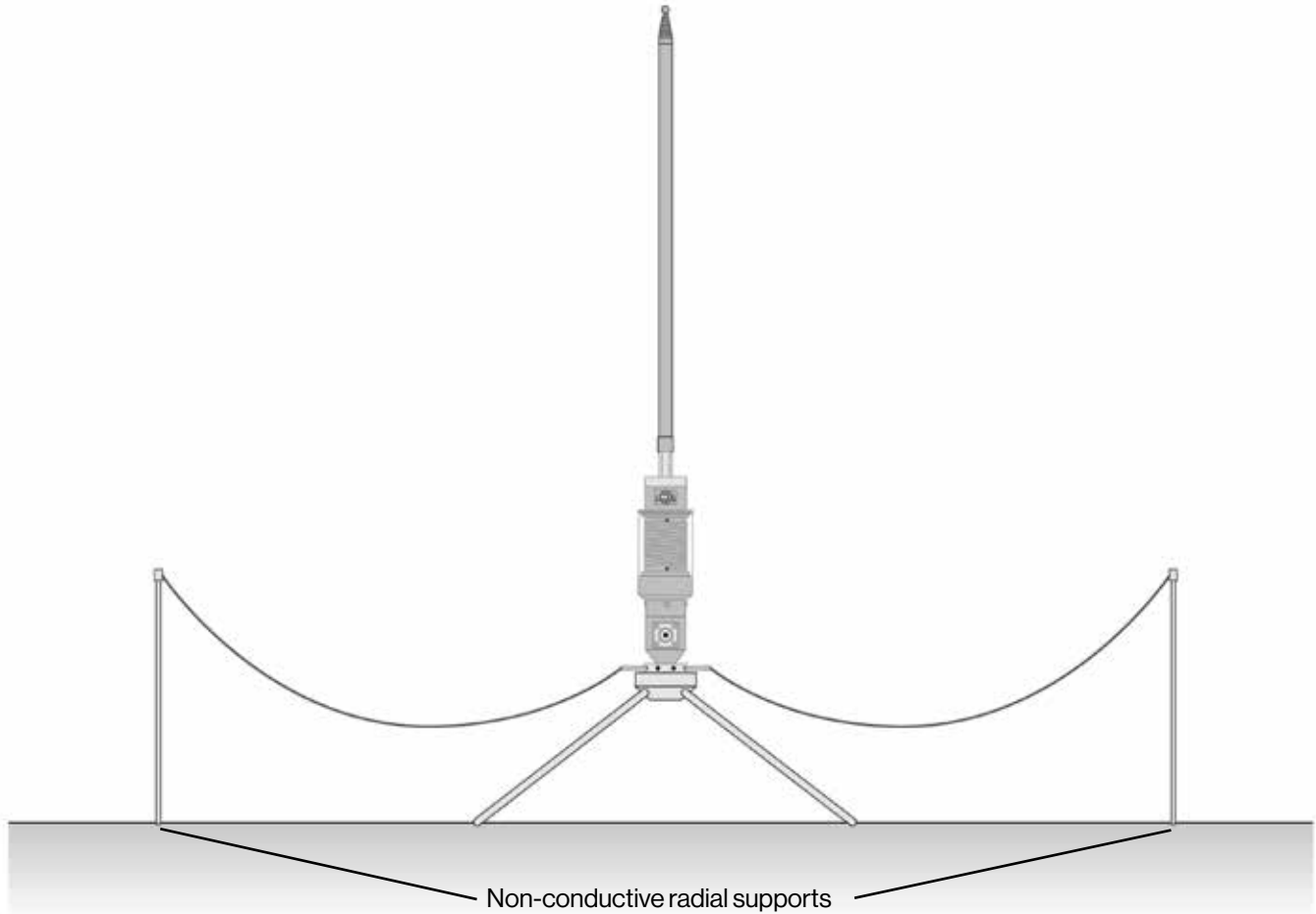
In this configuration, radials are placed on the ground around the base of the antenna. This is a convenient way to deploy the antenna and makes multi-band use simple. The ground detunes the radials and allows for multi-band use without tuned radials.

For maximum performance, a total of 16 radials is recommended. As more radials are added, losses are reduced and there is an increase the relative gain of the antenna. Increasing the radial field from 4 to 16 radials results in a gain of approximately 1.5 dB.

To achieve consistent tuning results, it is recommended to use the included insulating mount. Depending on the mount used, it can affect the tuning of the antenna. This is because the mounting stud is electrically connected to the ground side of the system. Using the insulating mount ensures only the radials attached are active in the ground system.

Deployment Configurations Continued

Elevated Radials



This drawing is not to scale and is for illustrative purposes only.

The above diagram shows a “gull wing” style deployment using the [Z] Pod and 3 foot radial supports. In this configuration, the radials are suspended by non-conductive supports at the end of each radial.

When compared to the ground radial configuration, this configuration requires more effort to deploy, but achieves higher performance with less radials. Just 2 elevated radials can perform the same as 16 ground radials.

For this deployment method we recommend using two 1/4-wave elevated radials tuned for each band. These radials can be deployed simultaneously for a multi-band radial configuration.

To achieve consistent tuning results, it is recommended to use the included insulating mount. Depending on the mount used, it can affect the tuning of the antenna. This is because the mounting stud is electrically connected to the ground side of the system. Using the insulating mount ensures only the radials attached are active in the ground system.

Tuning

With the [Z]-17 17' telescoping whip, the Recon 40 is capable of tuning from 7.0 MHz to 29.7 MHz while maintaining an SWR of less than 2:1. A coax choke is not required but may be used based on personal preference or if you find you have RFI issues.

Note: Different soils, radial configurations, and mounting options will affect the ground system of the Recon 40. Depending on these factors, you may notice a difference in the SWR and resonant point of the system. This is normal and well documented behavior of any vertical antenna system. We recommend using the included insulating mount to ensure the mount itself does not change the characteristics of the ground system. For further information we recommend reading Rudy Severns' (N6LF) work on radial ground systems here: antennasbyn6lf.com/2009/12/series-of-qex-articles-on-ground-system-experiments.html

1. Connect the coax to the coil base and antenna analyzer.
2. To operate the antenna on the 40 meter band, ensure the loading coil switch is set to "ON" (SEE FIG. 1). This activates the coil and sets the system into a loaded state. To operate on the 20 meter band and above set the loading coil switch to "OFF" (SEE FIG. 2)
3. Stand at least 10 feet from the antenna and run a sweep of the desired band. If you stand too close, your body will detune the antenna and throw off your measurements.
4. Note where the resonant frequency is on the antenna analyzer and adjust the telescoping whip accordingly. Increasing the length of the whip will lower the resonant frequency while shortening it will have the opposite effect (SEE FIG. 3). Make small adjustments on the whip. A little goes a long way.
5. Repeat steps 3-4 and adjust the whip accordingly until the desired tune is achieved. (SEE FIG. 4)

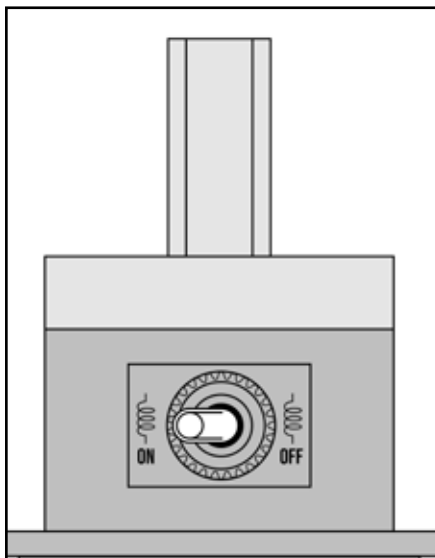


FIG. 1 - Place the loading coil switch to the "ON" position to engage the loading coil. This will tune the antenna to the 40M meter band.

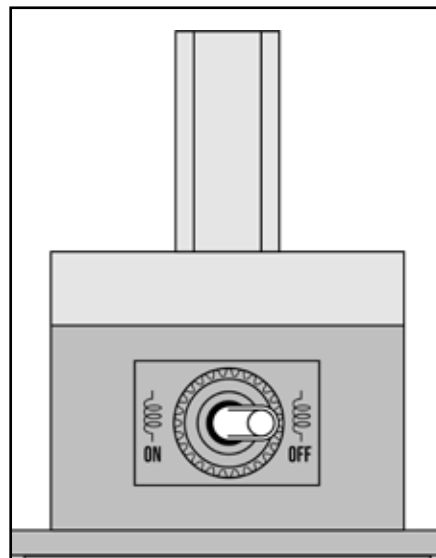


FIG. 2 - Place the loading coil switch to the "OFF" position to disengage the loading coil. This will allow the antenna to tune 20 meters and up.

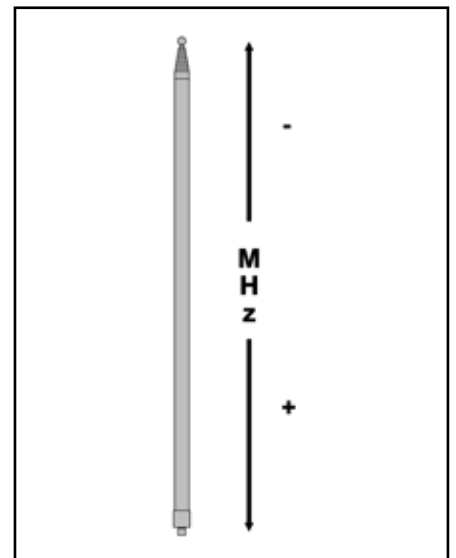


FIG. 3 - Extending the whip lowers the resonant frequency and retracting the whip increases the resonant frequency.



FIG. 4 - After extending/ retracting the whip, the resonant point directly aligns with the desired frequency.

General Maintenance

The Recon 40 requires very little maintenance, but following a few basic procedures will keep your antenna operating at peak performance.

After Each Use:

1. When operating in harsh environments, wipe down the coil unit with a damp cloth followed by a dry microfiber cloth.
2. Clean dirt from mounting spike using damp cloth.
3. Clean any dirt/debris from the mounting threads

Periodically:

1. Spray 100% silicone spray on a clean lint-free cloth and wipe the body down. This will condition the plastic and keep it looking great.

Warranty Information

Each product is covered by a 1 year limited warranty.

REZ ANTENNA SYSTEMS LLC, warrants this product to be free from defects in material or workmanship for a period of one (1) year following the date of purchase, provided that the product is used for amateur radio purposes. This limited warranty does not cover failures due to abuse, accidental damage or when repairs have been made or attempted by anyone other than **REZ ANTENNA SYSTEMS LLC**. A defective product meeting the warranty conditions set forth herein will be replaced or repaired at no charge in the following manner: Send the product (prepaid) to the **REZ ANTENNA SYSTEMS LLC** Service Center for repair or replacement at **REZ ANTENNA SYSTEMS LLC's** option. Proof of purchase may be required. Information about **REZ ANTENNA SYSTEMS LLC's** service center and warranty instructions can be found at www.rezantenna.com/warranty.

This warranty gives you specific legal rights and you may have other rights which vary from state to state. Should you have any questions, contact the **REZ ANTENNA SYSTEMS LLC** Service Center. This product is not intended for commercial use, and accordingly, such commercial use of this product will void this warranty. All other guarantees, express or implied, are hereby disclaimed.