

RANGER 80™

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: IMPALEMENT HAZARD

THE MOUNTING SPIKE HAS A SHARP TIP AND IS CAPABLE OF IMPALING A HUMAN BODY. THIS CAN CAUSE SERIOUS INJURY OR DEATH. ALWAYS USE EXTREME CAUTION WHEN HANDLING.

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 SECTION 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™ Ranger 80™

Kit Contents:

- (1) Ranger 80 Loading Coil Base
- (1) 9.3' Military Whip
- (1) [Z]QD-RP Radial Puck
- (4) 33' 18ga Radials
- (1) Mounting Spike
- (1) Backpack



Thank you for purchasing your REZ Antenna Systems Ranger 80! 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!

Specifications

COIL BASE	
Length	21"
Max Dia.	2.25"
Material	Delrin & 6061 Aluminum
Hardware	Stainless Steel
Coax Connector	SO-239
Power Limits	500 Watts SSB, 200 Watts Digital (50% Duty Cycle)

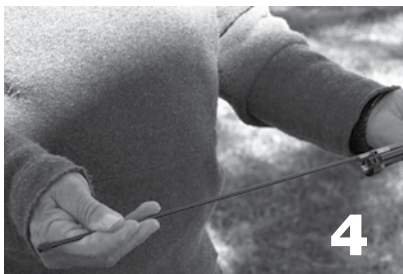
RADIAL SYSTEM	
Wire Length	33' (Set of 4)
Wire	18ga Stranded Copper
Termination	4mm Banana Plug
Radial Puck	3/8-24 Thread Pitch, (8) 4mm Banana Jacks

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

HEAVY DUTY MILITARY WHIP	
Length	9.3'
Material	Stainless Steel/Brass
Finish	Black
Mounting Thread	3/8-24 Thread Pitch
Collapsed Length	17"

Set Up

1. Find a suitable location to deploy the antenna. Stay far away from any potential hazards and at least 15 feet from any metal structures. They can detune the antenna and cause issues with tuning.
2. Drive the ground spike into the ground using a rubber mallet. Do not use any hard objects such as rocks or a metal hammer. This will cause damage to the spike. NEVER attempt to drive the spike in with the coil base attached, this will cause undue wear and void your warranty. *Note: the spike is intended for deployment in soft soils. If you plan to operate in rocky/hard soil consider purchasing the [Z]Pod tripod.*
3. Thread the Ranger 80 coil base into the ground spike (or [Z] Pod)
4. Assemble the collapsible military whip beginning at the top and working your way towards the bottom. Starting at the top makes the whip easier to assemble.
5. Thread the whip into the top of the coil base.
6. To deploy each radial, hold the banana plug end in one hand and throw the coil of wire in the direction you want to deploy each radial with the other. *Note: For this to work properly it's important to follow the radial coiling instruction video.*
7. Insert the banana plug into the radial puck. A symmetrical pattern works best but is not necessary. *Note: there are eight jacks on the puck allowing for expansion of radials at a later date. Make your own or purchase an additional [Z] QD-RK Radial kit.*
8. Proceed to tuning.



SCAN TO VIEW
SETUP VIDEO



Tuning

With the included whip, the Ranger 80 is capable of tuning from 3.5 MHz to 21.45 MHz with an SWR of less than 2:1. The Ranger 80 is also capable of higher frequencies when paired with a telescopic whip such as our Light Duty Telescopic whip. **Use one of the following methods to get the antenna tuned:**

Note: Different soils, radial configurations, and mounting options will affect the ground system of the Ranger 80. 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. 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

Analyzer Method

For the best performance we recommend using this method. This is the most accurate way to achieve the lowest possible SWR on this antenna system. Once you're familiar with the process changing bands should take less than a minute.

1. Connect your coax to the coil base and analyzer.
2. Slide the tuning collar to the "ballpark" area of the band you wish to use. The higher the collar is the higher the resonant point. (SEE FIG. 1)
3. Stand at least 10 feet from the antenna and run a sweep. If you stand too close, your body will detune the antenna and throw off your measurements.
4. Note where the resonant frequency is and move the tuning collar the corresponding direction a few clicks at a time. Step away each time and view the results on your analyzer. (SEE FIG. 2)
5. As you get closer to your target start moving the tuning collar one click at a time.
6. Once you've overshoot your MHz target by one click take the tuning collar back one click and begin fine tuning.
7. To fine tune, spin the tuning collar either clockwise or counterclockwise. This will cause the tuning collar contact to follow the groove between each wire like a screw.
8. Looking from the top of the coil, a clockwise turn will lower the resonant frequency and counterclockwise will increase the resonant frequency. (SEE FIG. 3)
9. Slowly spin the tuning collar a small amount in the required direction and step away each time until the resonant point aligns with your desired frequency. (SEE FIG. 4)



FIG. 1 - Lowering the tuning collar results in a lower MHz resonant point, raising it increases the MHz.



FIG. 2 - Since the target resonance is lower than the current resonance, the tuning collar must be moved down.

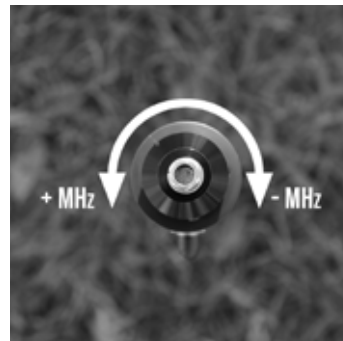


FIG. 3 - Spinning the tuning collar clockwise lowers the resonant point. Spinning the tuning collar counterclockwise increases the resonant point.



FIG. 4 - After turning the tuning collar the appropriate direction, the resonant point directly aligns with the desired frequency.



SCAN TO VIEW
TUNING VIDEO

Noise Method

This method requires finding an empty frequency on your radio and using the noise floor to tune the antenna. This method will get you close enough to operate in a pinch but is not recommended unless you have a tuner to clean up the remaining mismatch.

1. Connect your coax to your radio and to the coil base.
2. Find an empty frequency so all you hear is noise. Turn off noise reduction if your radio has it.
3. Turn the radio up loud enough to hear the noise from where you've deployed the antenna.
4. Slide the tuning collar to the "ballpark" area of the band you wish to use. The higher the collar is the higher the resonant point.
5. You should hear the noise begin to get louder and louder as you tune the antenna closer to your desired frequency.
6. Keep moving the collar a few clicks at a time, stepping away each time, until you get the loudest noise possible. If you hear the noise peak and get softer, then you've passed the resonant point. Back the tuning collar up until the noise is loudest again. Begin fine tuning if desired.
7. You may be able to fine tune using the noise in some instances. Use the same process as the analyzer method but instead, listen for the peak in the noise. You may not be able to detect any perceivable difference in noise at this point and that's okay, this is not an exact tune.
8. Check your SWR at your radio to make sure you are within range of what your radio can tolerate.
9. Begin operating!

General Maintenance

The Ranger 80 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.

Every Several Uses:

1. Ensure all screws and bolts are tight.
2. Coat each ferrule connection on the whip with a thin coat of dielectric grease. This helps keep moisture out of the whip.

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.