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Zerone 7545861343

Zerone 1-30 MHZ Manual Antenna Tuner Kit User Manual

Model: 7545861343

INTRODUCTION

This manual provides instructions for the assembly, setup, and operation of the Zerone 1-30 MHz Manual Antenna Tuner Kit. This kit is designed for HAM radio enthusiasts and QRP (low-power) transceivers, enabling effective matching between your transceiver and antenna within the 1-30 MHz frequency range. Please read all instructions carefully before beginning assembly.



Image: All components of the Zerone 1-30 MHz Manual Antenna Tuner Kit laid out for inspection.

SAFETY INFORMATION

- Always disconnect power from your transceiver and antenna system before making any connections or adjustments to the tuner.
- Exercise caution when soldering. Ensure adequate ventilation and use appropriate safety gear, such as safety glasses.
- Avoid touching live electrical components during operation.
- Ensure all connections are secure to prevent accidental disconnections and potential damage.

PACKAGE CONTENTS

The Zerone 1-30 MHz Manual Antenna Tuner Kit includes the following components. Please verify all parts are present before starting assembly.

- Enclosure box
- Printed Circuit Board (PCB) for SWR indicator
- Variable capacitors (2 units)
- Rotary switch
- Toroid core for inductor winding
- Various resistors, diodes, and LEDs for SWR indicator
- Coaxial connectors (Q9 type)
- Hook-up wire (red, yellow, copper)
- Mounting hardware (nuts, washers, screws)
- Control knobs



Image: A comprehensive view of all parts included in the kit.

ASSEMBLY INSTRUCTIONS

This kit requires soldering and assembly. Due to the DIY nature, it is recommended that builders have some experience with electronics assembly. Online resources, such as community forums and video tutorials, may offer additional visual guidance.

1. Prepare the Enclosure

- Drill holes in the enclosure for the variable capacitors, rotary switch, coaxial connectors, and LED indicator.
Important: Some users have reported that provided templates or instructions for drill hole sizes for the variable capacitors may be inaccurate, leading to oversized holes. Verify measurements carefully before drilling.



Image: The white plastic enclosure, which requires drilling for component mounting.

2. Assemble the SWR Indicator PCB

- Solder the resistors, diodes, and LED onto the small Printed Circuit Board (PCB) as indicated by the silk screen markings.
- Ensure correct polarity for diodes and the LED.



Image: The green PCB for the Standing Wave Ratio (SWR) indicator circuit.

3. Wind the Inductor Coil

- Using the provided copper wire, wind the inductor coil onto the toroid core.
- **Critical Winding Information:** Some documentation may contain errors regarding the winding diagram. A corrected winding sequence, starting from the capacitor tee-connection, is as follows: Start-1T-2T-2T-2T-4T-2T-3T-3T-2T-3T-2T-10T-END (GND).
- Connect the switch contact L, the wiper, and the free end of the 10-turn winding to ground.
- Connect switch contact A to the tap between the 1T and 2T windings, B to the 2T-2T tap, and so on, up to K to the 2T-10T tap around the switch.
- Ensure sufficient wire length for all interconnections.



Image: Copper wire for winding the inductor and the red toroid core.

4. Mount Components and Wire Connections

- Mount the variable capacitors, rotary switch, and coaxial connectors into the pre-drilled holes in the enclosure.
- Connect the two sections of each variable capacitor in parallel by connecting the two outer lugs together. Ensure lugs are clean for proper soldering.
- Wire the inductor coil, variable capacitors, rotary switch, and SWR indicator PCB according to the circuit diagram (not provided in this manual, but essential for assembly).
- Connect the Q9 type interface (if an M-type interface is desired, it must be sourced separately).
- Attach the control knobs to the shafts of the variable capacitors and rotary switch. **Note:** Some users have reported that the supplied knobs may not fit the shafts as intended, requiring minor modifications or alternative knobs.

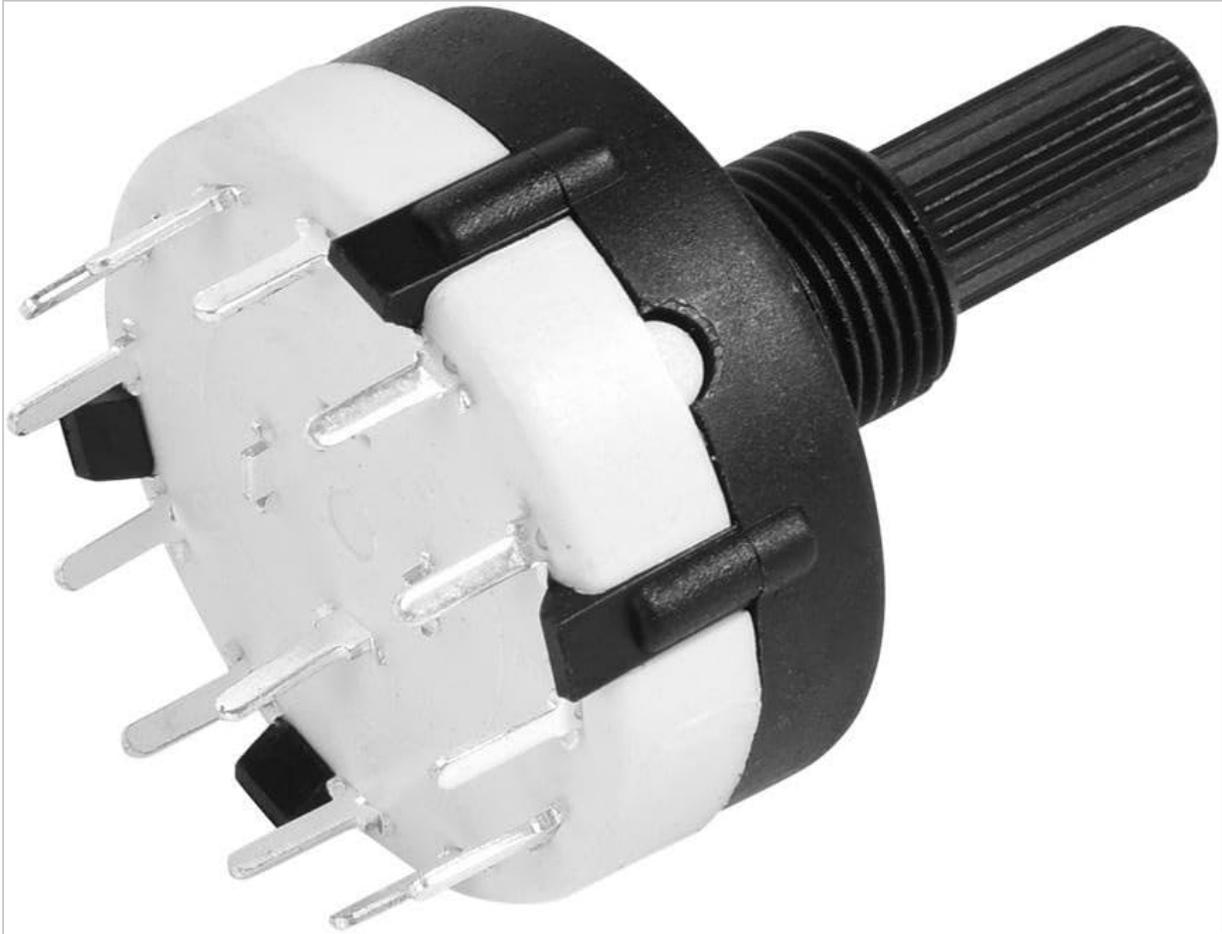


Image: Two variable capacitors, key components for tuning.

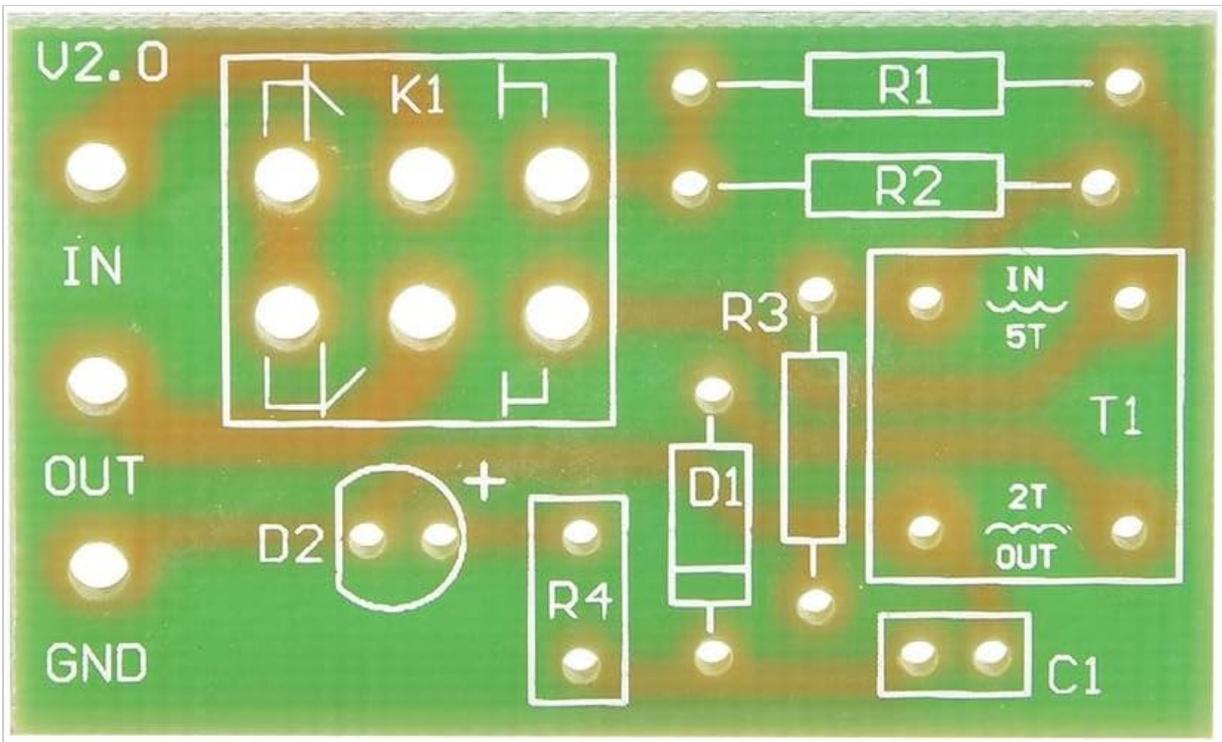


Image: The rotary switch used for selecting inductor taps.

SETUP

After successful assembly, connect the tuner to your HAM radio setup:

1. Connect the output of your QRP transceiver to the input (TX) port of the antenna tuner using a suitable coaxial cable.
2. Connect your antenna to the output (ANT) port of the antenna tuner using a suitable coaxial cable.
3. Ensure all connections are tight and secure.

OPERATING INSTRUCTIONS

The Zerone Manual Antenna Tuner uses a T-type topology network to match antenna impedance. The SWR indicator helps in achieving optimal tuning.

1. Set your transceiver to a low power output (typically less than 3W for tuning).
2. Select the desired operating frequency.
3. Adjust the rotary switch to select an appropriate inductor tap.
4. Adjust the two variable capacitors simultaneously or alternately to minimize the SWR, as indicated by the LED on the SWR indicator board. The goal is to achieve the lowest possible SWR (ideally 1:1).
5. Once a satisfactory SWR is achieved, you can increase your transceiver's power output (up to 15W).
6. Re-check SWR if you change frequency significantly.

MAINTENANCE

The Zerone Manual Antenna Tuner Kit requires minimal maintenance once assembled.

- Keep the unit clean and free from dust and moisture.
- Periodically check all connections for tightness.
- Avoid exposing the unit to extreme temperatures or direct sunlight for prolonged periods.

TROUBLESHOOTING

- **No SWR indication or poor tuning:**

- Verify all solder joints for continuity and proper connection.
- Check the polarity of diodes and LED on the SWR indicator PCB.
- Ensure the inductor coil is wound correctly and taps are connected to the rotary switch as specified in the assembly instructions.
- Confirm that the variable capacitors are wired in parallel and functioning correctly.
- Check coaxial cable connections to the transceiver and antenna.

- **Knobs do not fit or are loose:**

- The supplied knobs may require slight modification to fit the component shafts. Alternatively, consider sourcing compatible replacement knobs.

- **Limited tuning range:**

- Ensure the inductor coil winding and tap connections are accurate.
- Verify the variable capacitors are fully functional and wired correctly.
- The tuner's effectiveness can depend on the antenna type and operating frequency.

SPECIFICATIONS

Brand	Zerone
Model Number	7545861343
Operating Frequency	1-30 MHz
Maximum Power (Tuned)	15W
Tuning Input Power (Required)	<3W
Antenna Impedance Matching Range	30-300 Ohms
Interface Type	Q9 type
Weight	7 ounces

WARRANTY AND SUPPORT

As this is a DIY kit, warranty coverage typically applies to defective components upon receipt, not to issues arising from assembly errors. For support regarding missing or defective parts, please contact the seller directly. For assembly guidance, community resources and online tutorials are highly recommended.