

TW4040TM

The Adventurer MonobanderTM

TransWorld Antennas

INSTRUCTION MANUAL

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Due to continual product improvements, the information in this manual is subject to change any time without notice. TransWorld Antennas will be held free from liability, any problems arising from the use of this manual or the products described herein.

Manual Rev V1.0

1 Limited Warranty

TransWorld Antennas warrants to the original owner of this product if purchased from an authorized dealer or directly from TransWorld Antennas to be free from defects in material and workmanship for a period of 12 months from date of purchase, provided dated proof of purchase.

TransWorld Antennas agrees to repair or replace, at TransWorld Antennas' option, any defective product still under warranty. TransWorld Antennas will cover return shipping only. The warranty becomes null and void if it is determined that the product was subject to conditions beyond what the product is rated for, including, but not limited to, over power limits, extreme environmental conditions such as flood or fire, or general misuse.

TransWorld Antennas will repair or replace, at TransWorld Antennas' discretion, any out-of-warranty TransWorld Antennas product provided all part, labor, or other repair costs are provided by the customer, the amount of which is determined by TransWorld Antennas.

All repairs, in warranty and out-of-warranty should be sent to TransWorld Antennas along with a brief description of the problem and the circumstances, environmental conditions, and equipment used at the time the problem occurred. For warranty product repairs, a dated proof of purchase must also be supplied.

TransWorld Antennas will not be held liable, under any circumstances, for damages resulting from the use of any TransWorld Antennas product.

TransWorld Antennas reserves the right to make changes to this product, in part or in whole, at any time, in form, function, or manufacture, without obligation to install or incur any costs relating to the installation of modified parts onto existing product.

This warranty gives you specific rights. Other rights may apply, which vary from state to state.

An optional extended limited warranty purchased from TransWorld Antennas extends the period of this warranty to 24 months or 36 months, depending on warranty product purchased.

2 Important Safety Information



THE INSTALLATION OF THIS PRODUCT NEAR POWER LINES IS DANGEROUS. FOLLOW THE ENCLOSED DIRECTIONS.

1. If you are installing an antenna for the first time, for your own safety, seek PROFESSIONAL ASSISTANCE. Your dealer can explain which mounting method to use for the size and type antenna you are about to install.
2. Select your installation site with safety; the distance from power lines should be at least twice the height of the antenna and mast combined. REMEMBER: ELECTRIC POWER LINES AND PHONE LINES LOOK ALIKE. FOR YOUR SAFETY, ASSUME THAT ANY OVERHEAD LINES CAN KILL YOU. When installing your antenna, REMEMBER:
 - a. DO NOT use a metal ladder.
 - b. DO NOT work on a wet or windy day.
 - c. DO dress properly (shoes with rubber soles and heels, rubber gloves, long sleeve shirt or jacket).
3. If the assembly starts to drop, get away and let it fall. Remember, the antenna, the mast, the cable and the metal wires are all excellent conductors of electrical current. Even the slightest touch of any of these parts to a power line completes an electrical path through the antenna and the installer.
4. If any part of the antenna system should come in contact with a power line, DON'T TOUCH IT OR TRY TO REMOVE IT YOURSELF. CALL YOUR LOCAL POWER COMPANY. They will remove it safely.

GENERAL INSTALLATION INSTRUCTIONS FOR MAST MOUNTED ANTENNAS

1. Carefully follow the mounting instructions of the product.
2. Connect your mast at Ground by using a copper wire of minimum section 6 mm².
3. Pay attention to the correct locking of nuts and screws.
4. If necessary (windy areas or very long masts) the use of special anti-wind rods is recommended.
5. While your antenna is on Tx mode (transmitting) DO NOT stand nearby.
6. It is recommended to strictly respect the maximum power settled by law and follow the instructions manual of the product.
7. Stick self-adhering "DANGER" label at eye level on your mast.

3 Specifications

Congratulations on the purchase of your TW4040 antenna! The TW4040 represents a revolutionary jump in HF antenna performance, convenience, and reliability. The ruggedly built TW4040 was designed with ease of use in mind. Therefore, all TW4040 antennas are pre-assembled and tuned at the time of manufacture. With its compact three-part fold-up design, the TW4040 is ready to go right out of the box¹ for permanent or temporary installation using the supplied quick break-down stand.

The TW4040 is a center fed vertical dipole antenna with a very low radiation take-off angle (around 27 degrees above horizontal), allowing for very long skips using low power on 40 meters. The TW4040 is a ground-mounted omni directional antenna, requiring no ground radials, tower, or rotor.

3.1 Mechanical

Dimensions (folded):

Three pieces, each less than 34" long

Antenna Dimensions (after setup):

Width:	5' 3-1/2"
Height:	6' 10-1/2"
	8' 3" on permanent mounting tube
Weight: Approx.	10 lbs

3.2 Electrical

Mode	Maximum Power
SSB	1,200W PEP
CW	800W
RTTY	500W
AM	375W, 100% mod (full legal)

¹ Tuning may be required

3 Specifications *(cont.)*

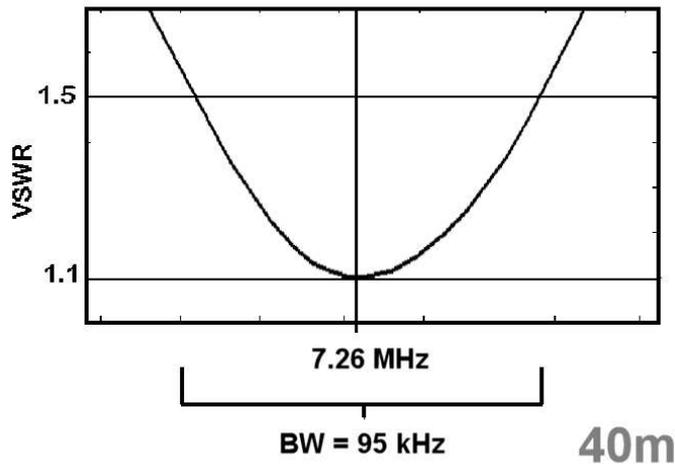
Antenna *(cont.)*

Band	1.5 : 1 Band Width ²	Typical minimum VSWR
40m	95 kHz	1.1 : 1

Directionality:	Omni directional
Vertical radiation angle:	27°
Band selection:	monoband only

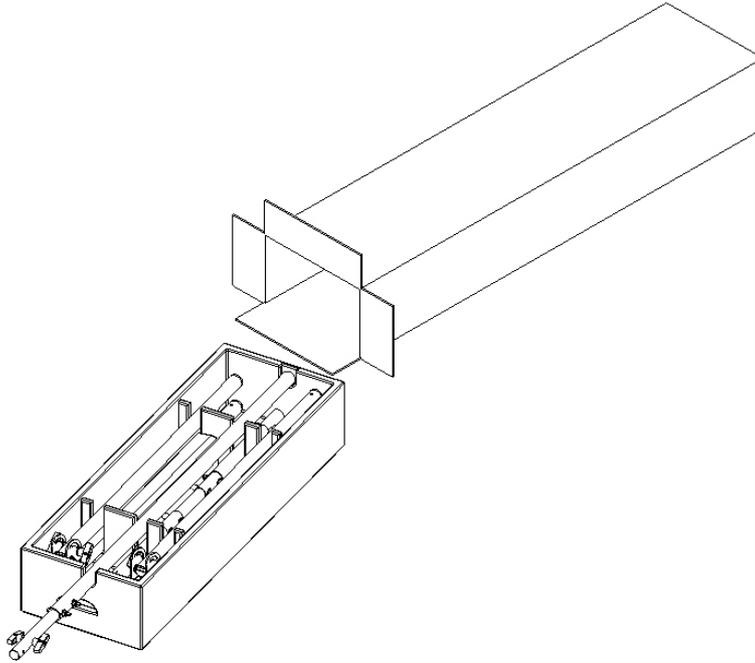
3.3 VSWR Performance

The plot below represents the VSWR performance of the antenna under the test circumstances noted at the bottom of this page. The term “bandwidth” here refers to the range of frequencies over which the antenna exhibits a VSWR of 1.5:1 or less.



² Test conditions: 100 feet of quality RG8/U coax, 100W output power, antenna mounted approx. 24" above ground with no external objects, metallic or otherwise, within 20ft radius of the antenna.

4 Unpacking



Here's what you should find in your shipping box:

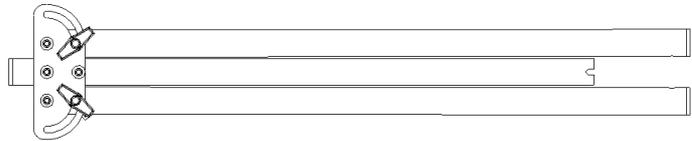
- Travel Bag containing the four main pieces of the antenna structure:
 - Top section
 - Middle section
 - Bottom section
 - Permanent mounting assembly
- Also included is:
 - This manual

Save all packaging materials! The original shipping materials may serve as a very handy travel box for portable applications. Also, if the antenna is returned for warranty or money-back guarantee claims, all original packaging materials will be required for approved shipping.

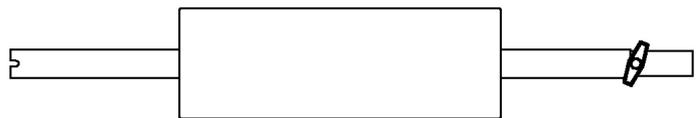
5 The Components of your Antenna

The structure of your antenna has been built in three pieces, top, middle, bottom. The top and bottom pieces fold up for quick and easy travel. Fold-up and assembly of the three main structure pieces is achieved using pre-installed clamp knobs. See below for a summary of these four components.

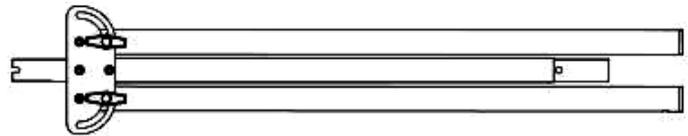
Top Section
32.2" x 6.25" x 3.8"



Middle Section
30.13" x 7.41" x 4.88"



Bottom Section
33.75" x 6.25" x 3.8"



Permanent Mounting Assembly
48.00" x 3.20" x 1.25"

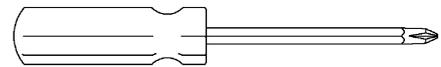


6 Getting Started

Getting started with your new TW4040 is quick and easy. Follow these steps to get started using your new antenna right away.

6.1 Tools Needed

A small Phillips screwdriver should be the only tool ever needed for use with your TW4040, required to open the switching array box for adjusting tuning (page 12).



Under normal circumstances, after optional initial tuning, no tools should ever be required for break down, transport, and setup of the TW4040.

6.2 Antenna Setup

1) Choose a location for your antenna. The area you choose for your antenna should be at least 10 meters (about 33 feet) from any metal structure or other objects that could detune the antenna.

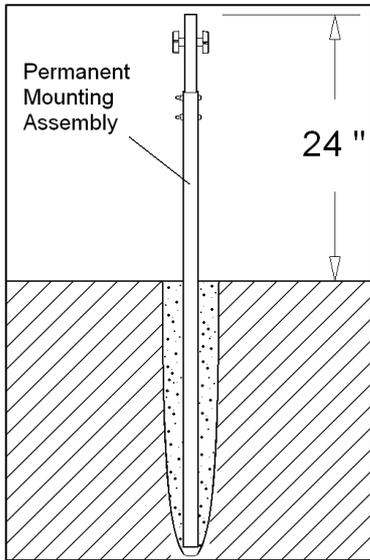
⚠ Danger: *The antenna should not be placed anywhere near power lines, as serious injury or death could occur.* And as always, **CALL BEFORE YOU DIG** to ensure you know where buried gas, water, sewer, power, and other service lines are located.

⚠ Danger: As with any antenna installation, exposure limits should be calculated to ensure safe operation. Visit the ARRL website (<http://www.arrl.org/news/rfsafety/>) for more information on exposure limits and calculations.

The antenna's coax feed line should be run at a 45-degree angle down from the structure to the ground to minimize parasitic coupling (see figure on page 11). Failure to do so will result in higher than expected VSWR readings. Plan for this extra footprint when choosing a location for your antenna.

2) Install Permanent Mounting Assembly. The supplied Permanent Mounting Assembly consists of insulator rod attached to an aluminum tube using stainless steel hardware. The assembly can be installed with or without the use of

concrete. Though concrete will provide a more secure, permanent base for your antenna, it will be difficult to remove or re-position later. The assembly should be inserted about 12-24" into the ground, exposing 24-36" of the assembly above ground.

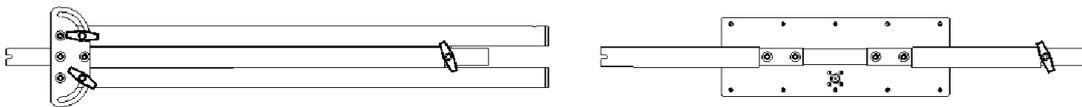


It is suggested that the antenna be tried in an area using the permanent mounting assembly in a hole in the ground before concreting, in case the antenna needs to be moved later. Once you are sure of the location for the antenna, the Permanent Mounting Assembly can be concreted into place, if desired.

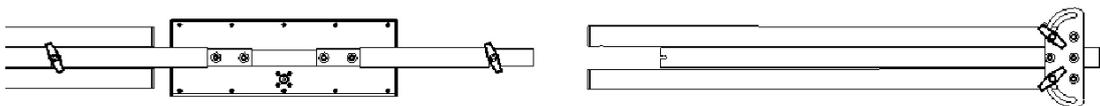
Warning: The fiberglass insulating rod is *not* hammer-proof. Do not pound the Permanent Mounting Assembly into the ground like a stake. Permanent damage to the fiberglass insulating rod could occur. If it is necessary to drive the assembly into the ground, first remove the fiberglass insulating rod using a 5/32" Allen wrench and a 7/16" socket. Drive the aluminum permanent mounting tube into the ground using a rubber mallet. Alternatively, a

conventional hammer can be used if a wooden board is laid over the aluminum mounting tube before striking.

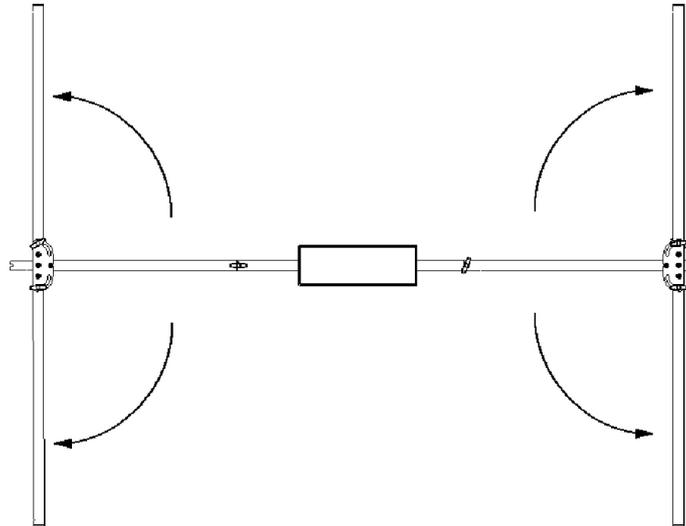
3) Assemble antenna. First, attach the bottom section to the middle section, making sure to slide the pieces completely together. The 1/4" slots on the end of the middle section should engage completely with the stud of the clamp knob on the end of the bottom section, as shown in step 1 below. Tighten the clamp knob snugly.



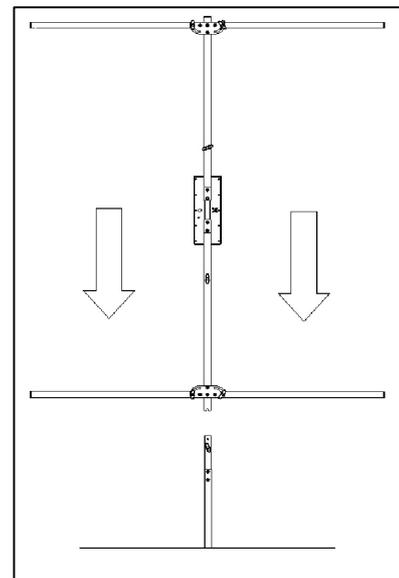
Second, attach the middle section to the top section as shown in step 2 below. Again, the clamp knob stud should fully engage with the slots on the end of the top section. Tighten the clamp knob snugly.



Finally, fold the arms of the top and bottom sections out as shown in step 3. The arms should be folded out completely horizontal. Firmly tighten all four clamp knobs to ensure that the top arms do not rotate downward over time.



4) Install antenna onto the Permanent Mounting Assembly. As shown at right, slide the bottom of the bottom section onto the Permanent Mounting Assembly's insulator rod. As with assembly above, the slots on the end of the bottom section should fully engage with the mounting assembly's clamp knob stud. Firmly tighten the clamp knob.

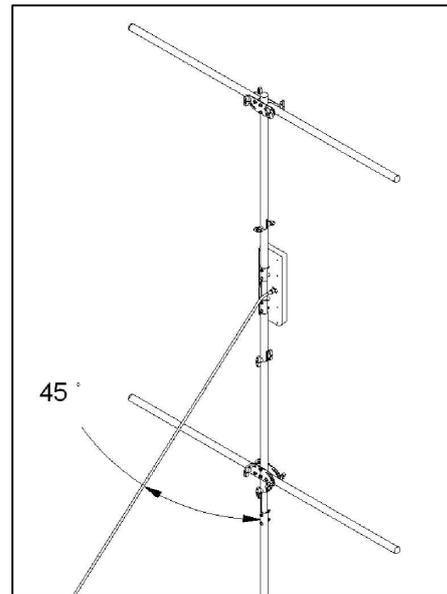


6.3 Connections

⚠ Warning: Turn off equipment before making or removing any connections. Failure to do so could result in equipment damage.

Coax cable. Connect your coax cable to your radio and to the SO-239 on the TW4040's loading array box. It is highly recommended to use *at least* 65 feet of coax on your TW4040. For best performance, use a high quality RG-8 or RG-8X coax cable.

Final connection notes: The coax cable should feed the antenna at a 45-degree angle as shown in the figure at right. Failure to do so will result in parasitic coupling and cause higher than normal VSWR readings.



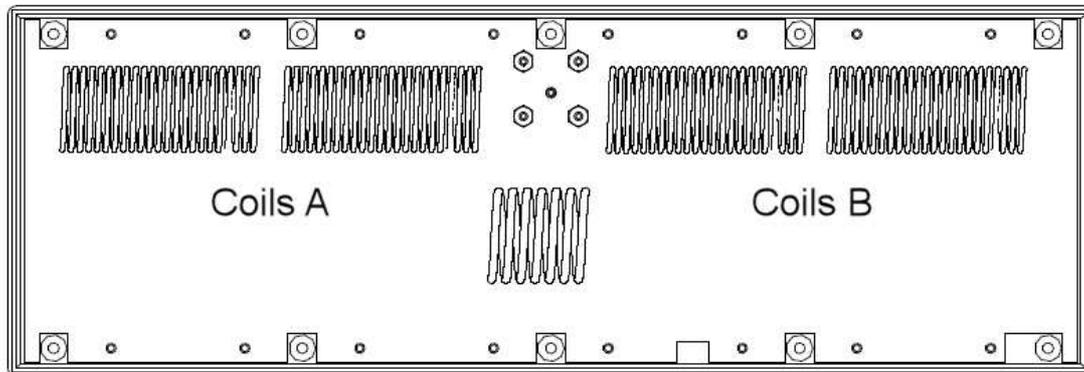
6.4 Tuning

Although your TW4040 was factory pre-tuned³, the environment in which your antenna is placed has an effect on tuning. Some minor adjustments may be necessary to tune the antenna to the desired center frequency for each band. Check the tuning of the antenna using an analyzer or the SWR meter on your transceiver before performing the tuning process. Post-factory tuning might not be required.

⚠ Danger: Do not apply RF power to the antenna while anyone is standing near the antenna. RF burns or electrical shock may occur, causing severe injury or death.

³ The antenna is pre-tuned to the center of the general portion of the phone band under circumstance that may differ from the environment of your specific installation.

Loading Array Operation. Both of the coils on each half of the loading array are series connected. The bottom half of the loading array is effectively a mirror image of the top half.



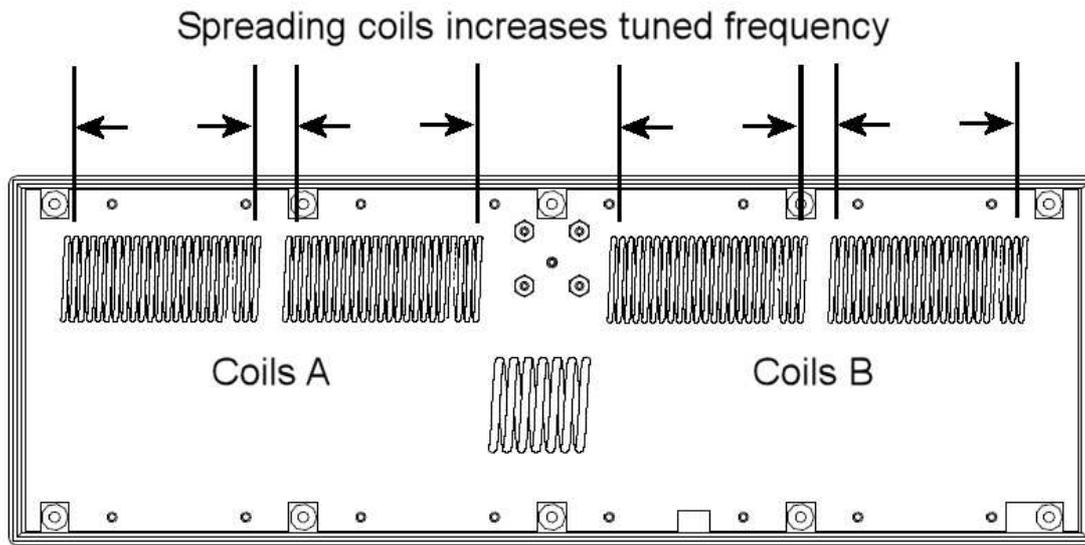
Equipment. The tuning process requires Voltage Standing Wave Ratio (VSWR) measurement. These measurements can be accomplished using most any antenna analyzer. However, these devices typically generate a very small signal (less than 0.2W), and may show higher than expected VSWR readings. A reading of 1.3:1 at the tuned frequency is typical at this low power. The VSWR readings should decrease once the antenna is used with 5W of power or more. The VSWR reading on your transceiver will likely show a lower VSWR than a low-power antenna analyzer.

Cables. Make sure that the coax used for the tuning process is at least 65 feet long, and that the coax is installed at a 45 degree angle as described on page 11.

Tuning. By spreading both “Coils A” and “Coils B” above, the tuned frequency will increase. Likewise, compressing the coils will decrease the 40m tuned frequency.

1) Preparation. To begin the tuning process, remove the loading array cover using a small Phillips screwdriver and connect the coax cable to the loading array box. The coax you use for the tuning process should ideally be the coax you plan to use for the antenna during normal use. Connect the coax cable to the device you wish to use to measure VSWR.

2) Tune. Determine to what frequency the antenna is best tuned. If you wish to increase the tuned frequency, spread open both “Coils A” and “Coils B” on the circuit board, as shown in the figure below.



Final tuning notes

If lower bands exhibit very low VSWR, but higher bands suffer VSWR problems (or vice-versa), the spread of the center coil can be adjusted to effect which bands tune best. By spreading the center coil slightly, the low-frequency bands will tune better, and by compressing the center coil, the higher-frequency bands will tune better. But note that if the center coil is changed, the tuned center frequencies may change and the tuning process above will have to be repeated.

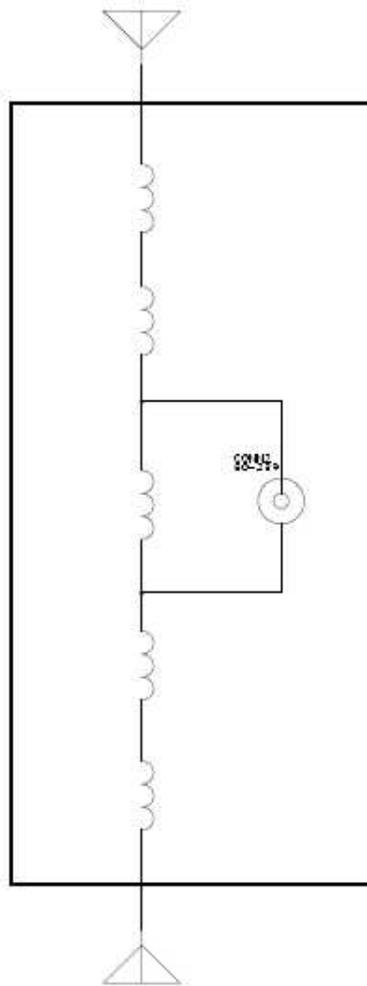
If tuning proves difficult, follow this checklist to eliminate common tuning problems:

- Is your antenna placed at least 30 feet away from other objects (buildings, people, trees, etc.)? The ends of the antenna's arms are very sensitive to coupling with external objects.
- Is your antenna installed such that the arms are at least 24" off the ground? The spacing between the antenna's arms and the ground should be between 24" and 36".
- Is your coax cable a high-quality RG-8 or RG-8X cable?
- Is your coax cable long enough? At least 65 feet of coax should be used for best results.
- Is your coax installed at a 45-degree angle with respect to the antenna as in the figure on page 11?
- Are you checking the VSWR using less than five watts? Once at least five watts is applied to the antenna, VSWR readings may improve significantly.

7 Schematics

This page contains the schematics for the TW4040's TW-RB-3 loading array.

TW-RB-3
Loading Array



8 Contact Information

If you need to contact TransWorld Antennas, just drop us an email at:

support@transworldantennas.com

Use this email address for help with installation, setup, tuning, or operation, for product or company information, or warranty/money back guarantee claims.

Check back at our website frequently for product updates at:

www.transworldantennas.com

We can also be reached through our web-based contact system on the website.