# *Tarheel Antennas, Inc.*

## Instruction Manual
## for the
## Model 200A-HP
## Continuous Coverage
## HF Antenna

**PROUDLY MADE IN THE**

**UNITED STATES OF AMERICA**


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# Thank you for purchasing the Model 200A-HP Tarheel Antenna

## Packing List for Model 200A-HP

Model 200A-HP Antenna
6 ft. Stainless Steel Whip
Up/Down Switch
20 ft. Control Cable
Ferrite Core
Matching Coil
Fuse Holder & Fuse
1 tube of Dielectric Compound
Manual

## Packing List for Model 200A-HP Package

All of the above - - plus the following
MT-1 Antenna Bracket
Quick Disconnect for the Whip
21 ft. of RG-8X Coax with connectors installed
1 pack of Coax Seal

## Model 200A-HP Antenna Specifications

Lower Mast Length – 4ft.
Frequency Coverage with 6’ whip – 3.2 to 25 MHz
Power Rating – 1.5 Kw P.E.P.
Typical SWR – 1.5 to 1 or less
Total Height with 6’ whip at 25 MHz – 10’4”
Total Height with 6’ whip at 3.2 MHz – 12’4”
Weight – 8.5 lbs.

# Installation

Before installation of this antenna there are a few things you have to consider. To get peak performance you need to try to mount the antenna in a location where the decoupler (this is where the coil comes out of the antenna) is at least as high as the highest part of the vehicle. Next, and this is the most important is the vehicle ground must be within 12 inches of the base of the antenna. This ground path should be provided with ground strap at least 1/2 inch wide.

Picture 1 – MT-1 & MT-30FB

After installation if the SWR will not go below 1.5 on the frequencies above 10 MHz it's because of the ground path mentioned above. Again, ground close to the base is most important with this and any other antenna.

This is a large antenna that will require heavy duty mounts to withstand the pressure produced from the wind load. All of Tarheel Antenna mounts are designed to take this load.

While we have a variety of mounts lay the antenna down horizontally, it’s designed to be mounted vertically. While using these mounts, just make sure the anti-rotation rib on the antenna will be at the bottom while in the horizontal position.

Picture 2 – MT-1 & MT-5

Picture 3 – MT-1 & MT-3FB

Picture 4 – MT-1 & Automatic Lift & Lay

Picture 5 – MT-1 & MT-3

The MT-1 antenna bracket is designed to make your antenna mounting convenient and incredibly strong. Made to clamp to standard 1” pipe (1.312 OD) or bolted to a flat surface. (Picture 6)

Picture 6

Picture 7

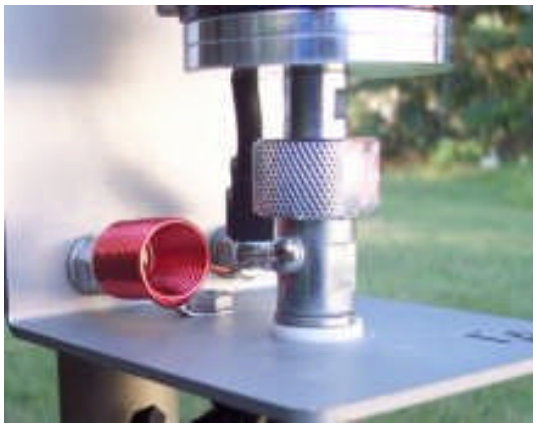
There are a few steps to make sure you install the MT-1 antenna bracket the way it is intended. First you need to install the upper half of the quick disconnect in the bottom of the antenna tight (Picture 7). Be sure to use the lock washer.

The MT-1 antennas bracket has 6 cutouts for the anti-rotation rib that’s on the antenna. Be sure the rib goes into one of these cutouts, there is no need to cut the insulator, it will compress enough to tighten the antenna down, (Picture 8)

Picture 8

Picture 9

Don’t forget to tighten down the top half plate and the quick disconnect. (Pictures 9 & 10)

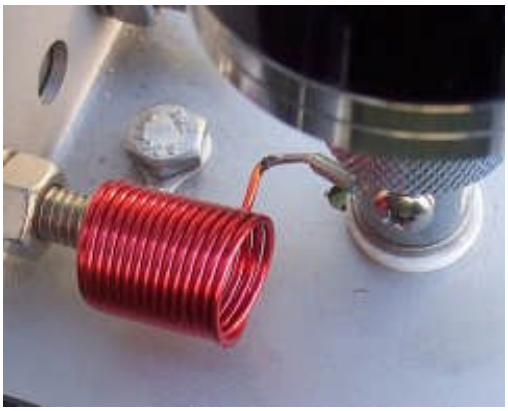


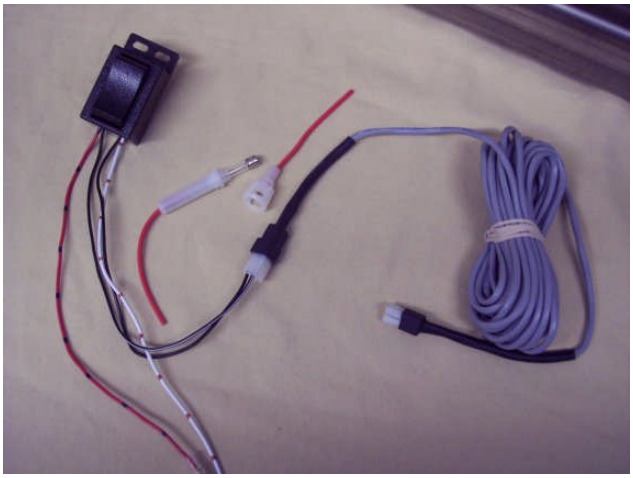
Picture 10

Picture 11

Included with the antenna is a special mix #31 ferrite core that needs to be mounted on the control wire as close to the antenna as possible. Loop the wire through the choke at least 3 times. (Picture 11) It is used to decouple the control cable from the antenna. If you fail to install this ferrite core acts like a single radial and the antenna will be untunable.

The next thing is the matching coil. This coil must go from the antenna base to the immediate ground. The MT-1 antenna bracket provides this connection. On a loaded mobile antenna below 10 MHz some form of impedance matching is required. Pictured is the matching coil on MT-1 bracket (Picture 12).





Picture 13

The up/down switch (Picture 13) that comes with the antenna package will plug directly into the control cable to the antenna, then there will be 2 wires left on the switch. One will be white with red dots and one red with black dots. This system is designed for a standard 12vdc system. Keep in mind polarity of these two wires are not important. With the switch mounted up (wire to bottom) you can wire the red wire with black stripes to positive side of your 12vdc system, and the white wire with red stripes to the negative side. This will allow the antenna to go up while you press the up button (this is the way most wire up to their systems). Up on the switch means the antenna is going UP in the band and DOWN in the bottom (this is the way most wire up to their systems). Up on the switch means the antennas is going up in height and Down in frequency. If you prefer that is reversed all you have to do is reverse the connections. Be sure you add the fuse to the positive side.

Most installs:

Red with black dots – 12 volt positive

White with red dots – 12 volt ground

# Now You Need To Install The Top Whip

**Whip Length versus Frequency Coverage**

3 ft. --4.0 MHz to 32.0 MHz
4 ft.--3.7 MHz to 30.0 MHz
5 ft. --3.4 MHz to 28.0 MHz
6 ft. --3.2 MHz to 25.0 MHz
8 ft. --2.8 MHz to 20.0 MHz
10 ft.--2.5 MHz to 18.0 MHz
12 ft. --2.3 MHz to 15.0 MHz

**CH-1 -- Capacitance Hat**

Hat only -- 3.5 MHz to 30.0 MHz
Hat with 3 ft. whip -- 3.0 MHz to 25.0 MHz
Hat with 6 ft. whip -- 2.7 MHz to 21.0 MHz

Our standard whip is 6 ft. long; it can be cut to any length for the coverage you need. Keep in mind that the longer your whip is the better the performance will be on the lower bands, however you will loose your upper frequencies with the longer whip. As and example, if your main frequencies are 17 meters thru 80 meters then the capacitance hat plus the 6 ft. whip are a powerful combination.

**Do not try to twist or turn the bug shield on the outside of the antenna, this is designed not to turn.**

## Initial Tune Up

For the initial tune up a SWR analyzer is nice to have if you have access to one. If not, make all your adjustments with low power. Now, lower your antenna until it reaches the end stop and go to 10 meters (or your highest frequency depending on whip length) and check your SWR, it should be low. Next, you can go to 15 meters and raise the antenna until you get a SWR dip there. Then 20, then so on.

Keep in mind that 10-20 meters are close together. If the SWR doesn't go below 1.5 on these bands the ground is probably too far away, remember the ground needs to be less than 1 foot from the base of the antenna.

**IMPORTANT:** Don’t make any adjustments to the matching coil until you read and understand the next paragraph.

Now you need to go to the middle of 40 meters and check your SWR. Record that and then go to 80 meters and do the same. Your standing wave should be below 1.5 on both bands. If it is below 1.5 on both bands no adjusting is needed on the matching coil. However, if the SWR is above 1.5 on 40 meters and low on 80 meters this means there is too much inductance from the matching coil. This can easily be corrected by simply spreading the matching coil (Example 7) a very small amount until a low SWR is attained on 40 and 80 meters. If you have spread the coil approximately 2 inches wide and the SWR has not dropped on 40 meters then there is most likely a ground issue. However, keep in mind if you had to go to this extreme to tune, your ground path is most likely too far away or you have other antennas too close to this antenna.

Example 7

If properly installed this antenna will have a standing wave below 1.5 from 3.5 to 30 MHz (coverage depends on whip length). We know that every antenna installation is unique and it is impossible to describe all the scenarios in this manual. However, if you are having problems with this initial tuning please call.

**NOTE:** Don’t use the Dielectric Compound or Coax Seal until all testing has been done.

With everything working and your ready to button this system up, then you need to put a small dab of dielectric compound or petroleum jelly (Vaseline) in the molex connector at the antenna and also in the PL-259 at the antenna. Wipe off any excess and then seal the molex plug and coax connector with Coax Seal or tape. We’ve seen this technique used for years on installs in the northern states where a lot of salt is used on the roads in the wintertime and when dissembled they look as clean and shiny as the day they were installed.

# Operation

Remember that when the coil is all the way in it's resonant on the high bands and all the way out on the low bands. It will take a little time to get use to this style of antenna, some mark the antenna with tape to mark the approximate location of the bands, some just listen to the noise level increase on the radio's receive when it's close to resonant. When you fine tune you need to transmit a low carrier (AM, FM, CW) at 5 to 10 watts and watch the SWR meter until the dip. There are also several types of controllers on the market, most are good in their own unique way.

# Relative Tuning Positions

The following photos will show you relative tuning positions of the Model 200A-HP Tarheel Antennas.

Model 200A-HP -- full down position with 5 ft. whip -- 29.0 MHz

Model 200A-HP -- 21.2 MHz with 5 ft. whip @ 1/2" of coil showing

Model 200A-HP --14.2 MHz with 5 ft. whip @ 1 1/2" of coil showing

Model 200A-HP -- 7.1 MHz with 5 ft. whip @ 5" of coil showing

Model 200A-HP -- 3.9 MHz with 5 ft. whip @ 15" of coil showing

Model 200A-HP -- 3.7 MHz with 5 ft. whip @ 16" of coil showing

Model 200A-HP -- 3.5 MHz with 5 ft. whip @ 18" of coil showing

# Maintenance

Very little maintenance is required for your Tarheel Antenna. You should have years of trouble free service from this antenna. You've made a large investment for a mobile antenna. Here is a tip to help take care of your investment.

We use an automotive finish on this antenna so whenever you wash and wax your vehicle raise your antenna and wash and wax the shaft and the bug shield (Lexan tube), with wax on your antenna the bugs will have a harder time sticking to it.

About once per year or so, depending on how much driving you do and where the antenna is mounted you will need to wash the coil to remove any road grime, no parts to replace. Also a dirty coil will show vertical black streaks.

Here's how to clean the coil:

1. Run the antenna up till all the coil is exposed.
2. Remove the are 3 screws in the top Delrin Cap.
3. Then slide the Lexan bug shield down to expose the coil, next feel the coil, is it sticky?
4. If so it's dirty, now wipe the coil with alcohol.
5. Then lightly scrub the coil with a Scotch-Brite pad (available at any hardware store).
6. Then one more wipe with alcohol and that's it.
7. Reassemble the Antenna.

After you have the antenna reassembled, now is the time for a good cleaning on the outside. Use the alcohol to remove the grime off the tube and Lexan, next get a good coat or two of wax on it.

# Warranty & Guarantee

IF for the 1st 30 days if for any reason you are not completely satisfied, return the antenna undamaged for a full refund less the shipping charges. The antenna has a ONE YEAR NO MATTER WHAT WARRANTY to the original owner**.** If for any reason (**other than damage due to unauthorized disassembly, negligence, improper use, or use of Non-recommended Controllers**) your Tarheel Antenna fails to perform due to quality or workmanship Tarheel Antennas, Inc. will at our discretion either repair or replace at no charge for parts or labor. Shipping charges are your (the customer's) responsibility to and from Tarheel Antennas' repair shop. We here at Tarheel Antennas hope you enjoy one of the best performing, best built, best looking motorized antennas available.

We here at Tarheel Antennas hope you enjoy one of the best performing, best built, best looking motorized antennas available.

Please pass along any suggestions you may have to make our antenna better. All suggestions are appreciated. Also when you have your antenna installed please send us pictures.

Thanks,

Tarheel Antennas