

AMERITRON SDA-100

HF Mobile Screw Driver Antenna

1200 Watts PEP • 3.5-30 MHz

Instruction Manual

AMERITRON

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Thank you for purchasing the Ameritron SDA-100 Antenna

When properly installed this antenna will provide continuous coverage of 3.5 to 30 MHz with a 6' whip, also 6.0 to 60 MHz without a whip.

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 a ground strap at least ½ inch wide.

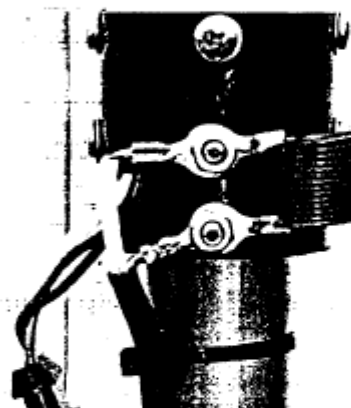
After installation if the SWR will not go below 1.5 on the frequencies above 10 MHz it's because of the ground path mentioned above. Again, ground close to the base is most important with this and any other antenna.

Included with the antenna is a choke that needs to be mounted on the control wire as close to the antenna as possible. Loop the wire through the choke at least 2 times. (Example 1) This choke does two things, one, it helps to reduce the amount of antenna control motor noise into the receive of the radio during tuning. The second thing, it's used to decouple the control wire from the antenna. If you fail to install this choke the antenna will be untunable.

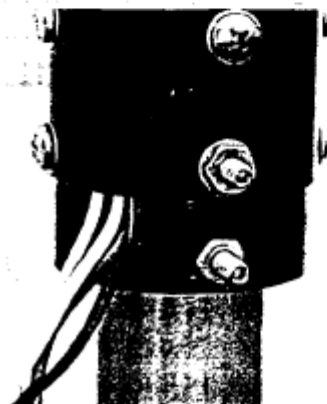
The next thing is the matching coil. This coil must go from the antenna base to the immediate ground. On a loaded mobile antenna below 10 MHz some form of impedance matching is required. (Example 2 The antenna is designed so that the matching coil will go directly at the bottom with the coax connection. (Example 2 & 3) The upper stud accepts the inner coax connection and one end of the matching coil, don't adjust this stud, it's set at the factory so it doesn't ground out against the mounting pipe. The lower stud needs to be tightened against the mounting pipe first, then you'll install the shield of the coax and the other end of the matching coil, when tightening the lower stud don't overdo it, all you will need to do is tighten it enough to get a good ground connection.



Example 1



Example 2



Example 3

Now You Need To Install The Top Whip

We recommend a 6' whip to get full coverage. You can use a shorter whip if you like but it hurts efficiency on lower bands. Or you can use a longer whip which will add about 1 db gain on the lower bands, but the antenna could be too long for the higher bands. After mounting of the antenna you need to route your antenna control cable and your coax cable in a location away from exhaust pipes and anywhere the cable can be damaged.

The control box can be mounted anywhere it's convenient for you. There are four wires coming out of this box.

Red Wire -- positive 12vdc / - Black Wire --- negative 12vdc

Green Wire -- antenna motor control / Yellow Wire -- antenna motor control

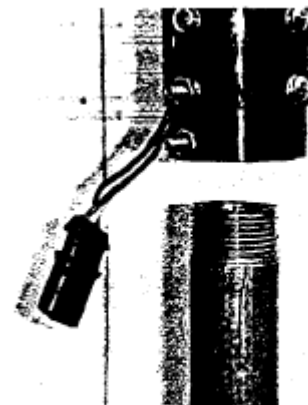
Polarity of the green and yellow wires are unimportant. Some like the switch function to be antenna up with the control button up and some like it to be frequency up with the control button up. Wire the green and yellow wires to your preference.

The Ameritron SDA-100 antennas come pre-wired for the motorized antenna memory units so if you decide to add one of these auto control units later you will not need to disassemble your antenna to install the sensors. Now the antenna has four wires coming from it. If you don't use one of the auto control units you will only use two of the wires, however, we recommend when you install the antenna to go ahead and run four wires so if you decide to add an auto control unit later your vehicle will already be wired. Color code: Antenna Motor Control Wires --.green and yellow,/ Auto Sensor Control Wires -- brown and white

WARNING

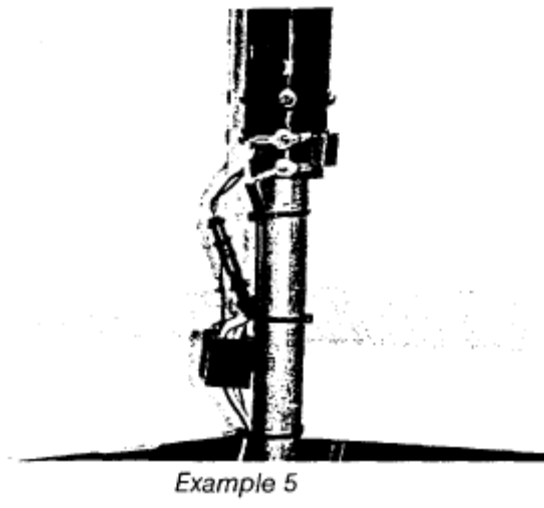
Do not apply any voltage to the brown and white wires on the antenna, to do so would damage the sensors. These two wires are sensor -control 'wires. **DO NOT TRY TO TWIST OR TURN THE BUG SHIELD ON THE OUTSIDE OF THE ANTENNA, THIS IS DESIGNED NOT TO TURN.**

The base of the antenna is threaded for standard 1" pipe. This is a common pipe size and thread, so finding this should not be a problem. (Example 4)



Example 4

Example 5 shows a typical installation when finished.



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 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. -

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 2) 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 you might need to remove a turn or two from the coil. 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.

If properly installed and grounded this antenna will have a standing wave below 1.5 from 3.5 to 30 MHz.

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 till the dip.

Running an Amplifier

This antenna is designed to handle up to 1.2 kw P.E.P. Do not exceed these ratings. Always do the initial tuning with low power then apply the amplifier if needed.