

USER INSTALLATION GUIDE

FOR FIRESTIK NO-GROUND-PLANE CB ANTENNA KITS

The information in this guide is specifically written for the Firestik line of No-Ground-Plane CB antennas. For installation instructions concerning Firestik's line of ground-plane-dependent antennas write to: Firestik Antenna Tech Support, c/o General Instructions, 2614 E Adams St, Phoenix, AZ 85034-1495.

Our catalogs are FREE.* Contact us by phone at 602-273-7151, fax 602-273-1836 or e-mail support@firestik.com. You may also visit our on-line catalog and web site: <http://www.firestik.com>

(*postal fees if outside the US, Canada and Mexico, may apply.)

INSTRUCTIONS - START HERE

ATTENTION INSTALLER: We recommend that you read all of this text before starting. Even though we tried to assemble the information in a logical fashion, there may be some considerations that appear in later text that could have helped you earlier. You may even find some helpful information printed under the heading of a mount you do not have. The NGP antenna kits are extremely user friendly, but we want you to get the absolute most from your system. The time will be well spent.

(T1) CHOOSING A MOUNTING LOCATION

a) All antennas perform best if they are given the room to work. If you sandwich the antenna between two or more objects, or place it in a way that prevents it from being able to radiate its energy in one or more directions, you will have diminished the antennas capabilities. Generally speaking, you should attempt to keep the upper 2/3's of the antenna above the vehicles roofline. If a four-foot antenna forces you to install the mount lower to control antenna height, it would be better to use a three-foot antenna and place the mount higher on the vehicle.

b) Transmit antennas are fussy when it comes to their near field of radiation. Objects, especially those made of metal, can distort the radiation pattern and/or cause energy to be reflected back into the antenna. Give your antenna the most freedom you can and it will perform better.

(T2) INSTALLING THE MOUNT

a) Unlike standard antenna systems, the NGP mount does not require grounding. You may mount it to plastic, wood, fiberglass or any other non-conductive substance. However, if you

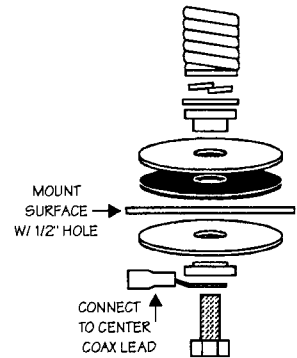
mount it to a grounded surface, such as a mirror arm, luggage rack, etc., don't worry. The path to ground will be isolated as long as the rest of the mount components are properly installed (refer to pictorial of your specific mount). In every case, the mount MUST remain insulated from the antenna base. If you ever have continuity between the mount and antenna base while the coax is disconnected from the radio, you can bet that you have a mechanical problem that requires fixing.

b) Roof Mount: The roof mount requires a 1/2" hole and a flat surface, preferably as horizontal as possible. The stainless steel disc and rubber-sealing disk go on the outside of the vehicle. The nylon

shoulder washer with the longest shoulder should also be installed on the outside of the vehicle, as should the lock washer, flat washer and spring-stud. Because of the variation in the thickness of material used on vehicles, it is a good idea to make sure that the mount will properly tighten on your vehicle. If one or more of the shoulder washers are preventing the assembly from tightening, you should sand down the shoulder of the longer nylon insulator. Refer to the pictorial of this mount for the proper location of the coax termination. You may use silicone type sealant in conjunction with the rubber gasket for additional water protection if you wish.

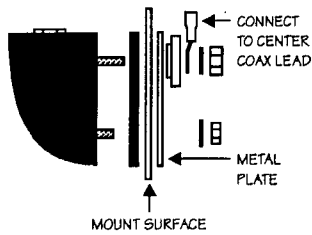
c) Molded Plastic Side Mount: This mount is specifically made for mounting on a vertical

(T2-b) ROOF MOUNT



surface, such as the side of a motorhome, camper, pick-up, etc. Two holes are required, one directly below the other. The top hole needs to be 13/32 to accommo-

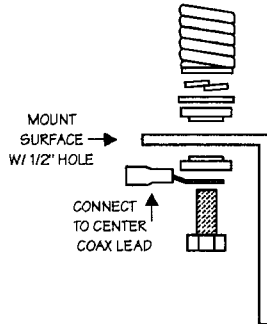
(T2-c) Molded Side Mount



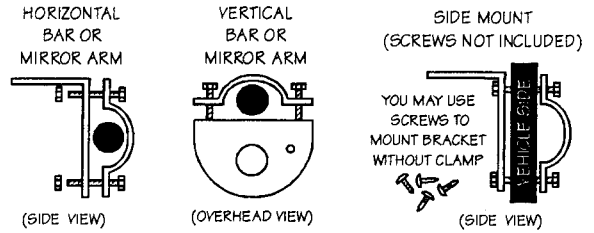
date the shoulder washer while the bottom hole should be drilled to 3/16" diameter. The mount and rubber gasket stay on the outside of the vehicle, the metal plate, shoulder washer, and nuts go on the inside. Refer to the pictorial of this mount for the proper location of the coax termination. You may use silicone type sealant in conjunction with the rubber gasket for additional water protection if you wish. Trick: If mounting on a motorhome with double thick walls, try to select an area where you have clear access from the inside, such as a flat wall or inside a cabinet. Pick up a "no-holes" electrical wall plate at a hardware store. Hold it to the wall and make an outline and mark where the two mounting screws go. Now cut out an access hole from the inside that is smaller than the wall plates requirements. Drill your mounting holes from the inside. After everything is finished, mount the wall plate with wood screws for a professional looking installation.

d) 3-Way Mount: The stainless steel 3-way mount is the most versatile mount on the market. You can mount it on a vertical or horizontal bar (mirror arm, luggage rack, ladder, cargo rack, motorcycle

(T2-d) 3-WAY MOUNT



3-WAY MOUNTING BRACKETS



frame, etc.), or use it as a side mount on any flat vertical surface. If need be, the angle can be changed by bending the bracket to accommodate minor slopes from vertical. When mounting to a bar, use the supplied clamp and two of the stainless steel bolts (install in a diagonal pattern across the mount). If side mounting, we recommend using all four sets of the mounting hardware except when, a) mounting to a strong metal surface, or b) using the clamp on the inside wall of the installation for added strength. Refer to the pictorial of this mount for the proper location of the coax termination. You may use silicone type sealant for water protection if you wish. Read mounting "trick" with double thick walls (previous section).

(T3) COAXIAL CONSIDERATIONS

The coaxial cable used on the NGP systems are an integral part of the system. As a matter of fact, neither the antenna nor the coax may be used with other antennas or coax that are not designated as being Firestik NGP components. This is a closed, tuned system.

Unlike standard coaxial cables, if you were to place an ohm meter across the center pin and housing of the PL-259 connector, you might think that the cable is shorted. However, on the NGP system, this is normal because we have built a path that allows the coax shield to act as the needed antenna counterpoise. There are

(continued, over →)

some very important issues to keep in mind when dealing with the NGP coaxial cable:

a) Never, ever reduce the length of the cable. It is so sensitive that removing 1/2" could cause the system to be untunable at the desired center frequency of your transceiver.

b) Never, ever ground the coax at the mount. Only the center conductor at the mount end needs termination. Use included shrink tubing to seal the connection. Connect ring terminal to mount as shown in diagram T2-b, T2- c, or T2-d.

c) If you need or want a longer feedline, use a barrel connector and add the additional cable between the radio and the NGP cable. We found that lengths that are multiples of nine (9) feet (9, 18, 27, 36, etc.) perform consistently well.

d) Treat the cable gently when routing it through the vehicle. Don't let it become pinched and avoid sharp bends. Protect the outer cover from abrasion. Holes in the cover open the door to RF leakage.

(T4) ANTENNA TUNING

Why should you tune your antenna? For maximum performance! When your antenna is tuned in a manner that allows your radio to transmit the maximum amount of power, you will benefit. When you first install your Firestik NGP antenna, set the tuning screw about half way out (the gap between the lock nut and bottom of the tip, the exposed thread area, will be a little more than 1/4"). At this position, assuming that your mount and cable were properly handled, you can safely operate your radio. Nonetheless, we always recommend that you measure the standing wave ratio (SWR) of your system and fine tune it to your vehicle. Before you start, keep these few things in mind ...

- The vinyl antenna cap should be on during all SWR measurements. If you set the antenna with the cap off, then put it on, the SWR will change.

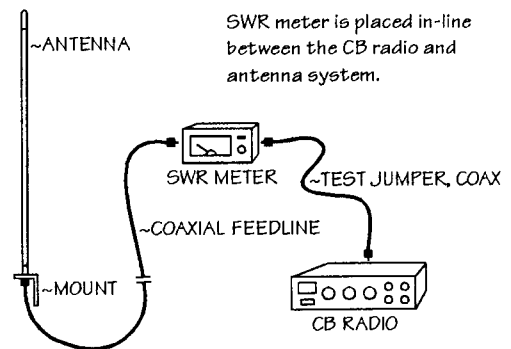
- Move the vehicle to an open area when testing. Your readings will be more accurate. Simulate actual use.

- Keep doors, hood and trunk closed as they can reflect signal and possibly cause false readings.

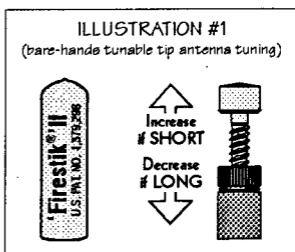
- If SWR on all channels is greater than 2.0:1, you may have a problem with the way the mount was assembled.

Your primary goal should be to have the SWR on all 40 channels below 2.0:1. For best performance across all channels, your specific goal should be to have the SWR on channels 1 and 40 set at the same value. It is really very simple! Even though the meters that are built into some radios are okay for general adjustments, an external meter between the radio and system coax will return the most accurate readings and make your job a bit easier. Radios with built in SWR meters, and external SWR meters always have instructions on how to use the meter. Nonetheless, take a reading on channel 1 and on channel 40 ... write them down.

SWR METER HOOK-UP



- If the SWR is a "Higher" value on channel 1 than on 40, you need to "Raise" the tuning screw (see illustration #1).



- If the SWR is a "Lower" value on channel 1 than on 40, you need to "Lower" the tuning screw.

NOTE: The shorter the antenna, the more sensitive it is to adjustments. One turn on a 4 foot antenna might move the SWR by 0.3; the same amount on a 2 foot antenna may move the SWR by 1.0. Make smaller adjustments on shorter antennaa.

You will develop a feeling for how much the SWR shifts with the amount of change you make in the tuning screw. When you have everything perfect, the SWR on channel 1 and 40 will be below 2.0:1 and will also be close to the same value. If you have accomplished this, the SWR on channel 20 (mid-band) should be below 1.5:1. Remember, low SWR equates to higher output. If you always use a particular channel that is not near the center of the band, you can shift the lowest SWR point to that particular channel. Keep in mind, the further you move from that channel, the higher the SWR will become. For instance, if you "dip" the SWR to its lowest point on channel 5, then move to channels over 25, your SWR may begin to exceed 2.0:1.

To receive a complete 32 page copy of "Measuring SWR and Things Every CB'er Should Know," send \$1.00 and a bar-coded UPC proof of purchase from any Firestik, Firestik II, Firefly, or Road Pal antenna or kit (\$3.00 without UPC) to Firestik Antenna Co, Tech Support, 2614 E Adams St, Phoenix, AZ 85034-1495. Telephone technical support is available at the factory Monday thru Friday, 9AM to 3PM MST. Call 602-273-7152. Please have your SWR readings from channels 1, 20 and 40 available if possible.