ARCHER®

SUPER MAXIM CITIZENS BAND ANTENNA

GENERAL DESCRIPTION

This model is an extended 1/2 wave vertical antenna. It is vertically polarized, end fed and has an omnidirectional pattern. This antenna is designed to cover the entire 27 MHz Citizens Band frequency range.

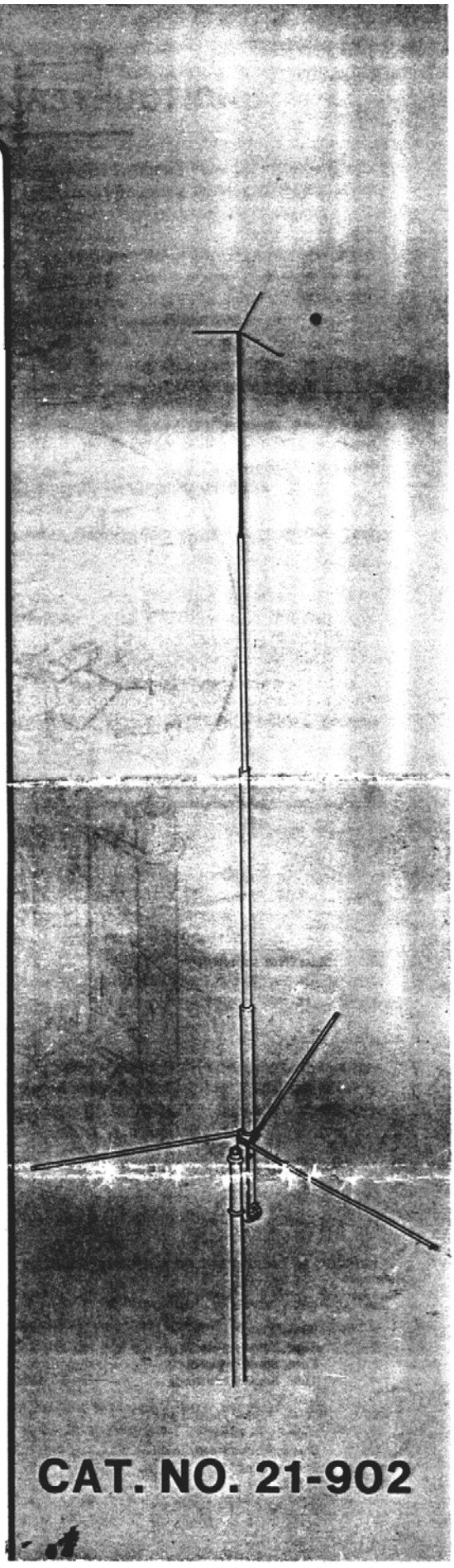
Its top hat electrically lengthens the antenna giving it an improved capture area for both transmit and receive while also reducing electrostatic noise, making it one of the quietest antennas on the market.

INSTALLATION

This antenna is designed to fit a 1-5/8" (41 mm) OD mast; 1-1/4" (31.8 mm) plumbers pipe has a 1-5/8" (41 mm) OD and is highly recommended for masting purposes. If at all possible, the antenna should be mounted clear away from all surrounding objects.

ANTENNA CABLE

The antenna is compatible with 52 ohm coaxial cable (not supplied). For runs of less than 50 feet (15 m), RG58/U is usually adequate. Over 50 feet (15 m), use RG8/U. The coaxial cable must have a PL-259 connector (not supplied) which mates with the antenna fitting.



CAT. NO. 21-902

CUSTOM MANUFACTURED IN U.S.A. BY RADIO SHACK A DIVISION OF TANDY CORPORATION

ASSEMBLY AND INSTALLATION INSTRUCTIONS

We suggest that you read through the instructions first, then check the parts with the illustration (Figure 1) to see that everything has been included.

To mount the antenna, you will need a mast no larger than 1-5/8" (41 mm) in outside diameter, coax cable and connectors. Your Radio Shack store has a complete line of CB accessories: Coax cable assemblies (with connectors) from 20 feet (6 m) up to 100 feet (30 m) in length; masts, insulators, stand-offs, etc.

1. Select the Base and Tube Assembly (15) and the Radial Plates (1). Slip the Radial Plates over the Base and Tube Assembly as shown in the Inset in Figure 1.

   NOTE: One side of each Radial Plate is elongated to fit over the Base and Tube Assembly bracket. Be sure to match these two sides before bolting them together.

2. Bolt the Radial Plates to the bracket and the plastic insulator with the three Hex Head Screws (7), three Large Lockwashers (12) and three Small Hex Nuts (11). Do not tighten at this time.

3. Insert the large end of the Large Tube (2) into the Base and Tube Assembly (15). Align the mounting holes and fasten securely with two Sheetmetal Screws (9) and two Small Lockwashers (14).

4. Insert the large end of the Small Tube (3) into the Large Tube (2). Align the mounting holes and fasten as in step 3 above.

5. Select the Top Radiator Assembly (17) and the three Top Hat Radials (16) and assemble as shown in the Detail of Figure 1. Use the Small Round Head Screw (8) and the four Medium Lockwashers (13).

6. Insert the Top Radiator Assembly into the Small Tube (3). Align the holes and fasten as in step 3.

7. Place the three Small Tubes (4) between the Radial Plates (1). Refer to the Inset in Figure 1. Fasten them securely with the Round Head Screws (6), the Large Lockwashers (12) and the Small Hex Nuts (11).

8. Place the three Caplugs (5) on the ends of the three Small Tubes (4).

9. Insert the two U-Bolts (10) into the Base and Tube Assembly bracket. Attach loosely with the two Split Lockwashers (18) and the two Large Hex Nuts (19).

10. Tighten **all** nuts on the Radial Plates securely.

11. Attach the coaxial cable (not supplied) to the SO-239 connector and weather seal the connections using Neoprene, Krylon or some similar substance.

CB ANTENNAS AND SAFETY

It happens more often than you realize! Someone falls off a roof or gets the **shock** of his life – **or death!**

Unfortunately, a good antenna site is often located near power lines, so it is imperative that you do not brush against these lines with the antenna elements.

Follow these rules and live:

1. Watch out for overhead power lines. Check the distance to the power lines before you start the installation.

2. Be extra careful when using a metal ladder.

3. **Remember, even the slightest touch of an antenna to a power line can cause fatal shock** – or at least serious damage to your person.

4. Have a friend act as a spotter when you're on the roof. He can see things you can't.

5. Don't try to do the job on a windy day.

6. If you start to drop an antenna, get away from it and let it fall (it could pull you with it or touch a power line on the way down).

7. If the antenna should come in contact with a power line – call your local power company, they'll remove it safely. **Don't try to remove it yourself!**

8. Masts, lead-in wire and guy lines are all excellent conductors of electrical current – keep them away from power lines too.

9. Be sure your family and friends understand the danger of touching an overhead power line. Tell them never to try to remove any object in contact with a power line – CB, TV Antenna, or anything else.

10. Make sure that the antenna mast assembly is properly grounded. Use lightning arresters and ground rods; both are available at your local Radio Shack store.

11. Perform as much assembly on the ground as possible.

A good rule of thumb to remember, whether installing the antenna or repairing your equipment, is: **Any voltage in excess of 100 volts should be treated as potentially lethal!**

Save these rules!

It is just as important that you follow these rules when you are dismantling or removing your antenna as it is when you are installing it!

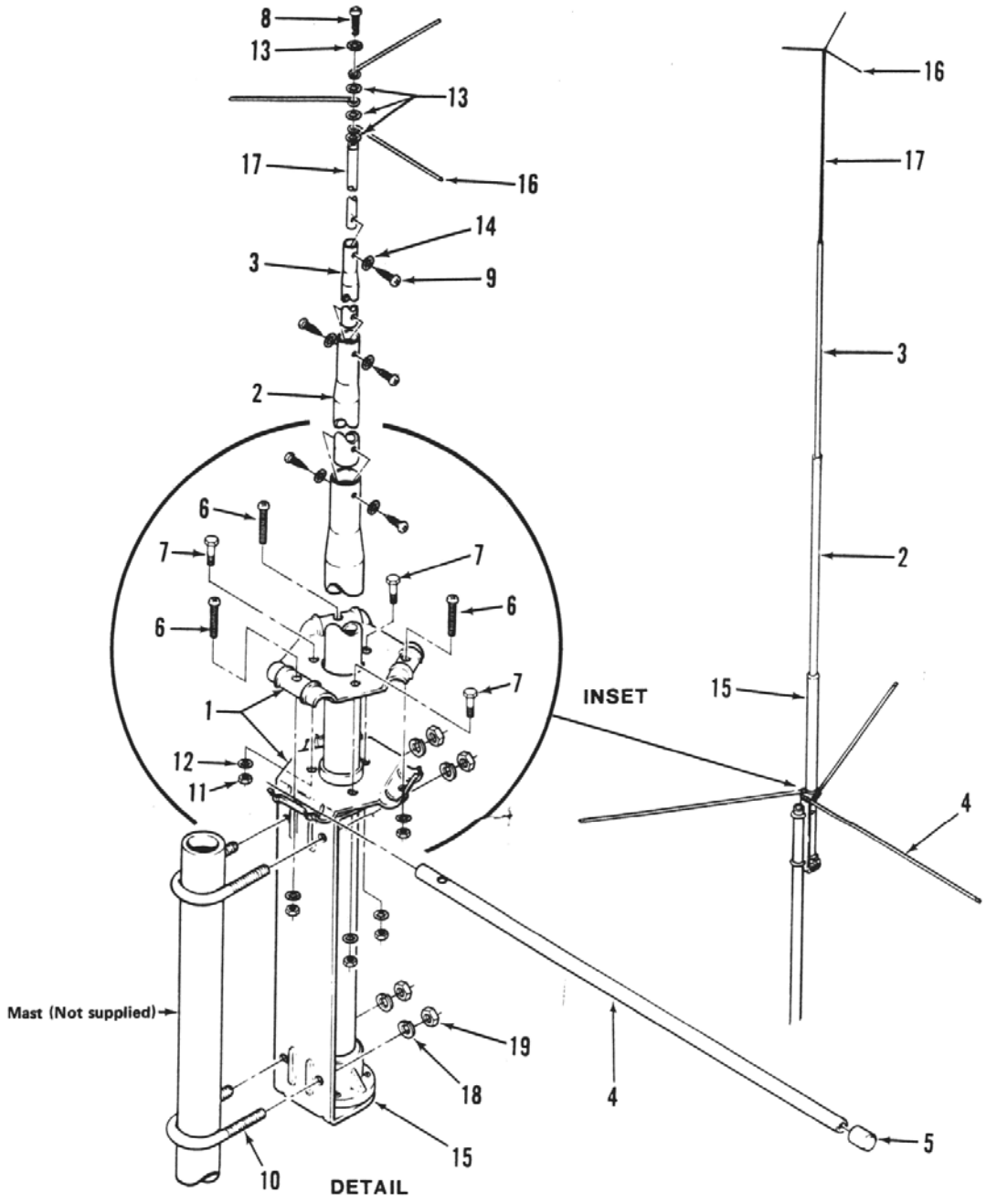


FIGURE 1.

PARTS LIST

Reference Number	Description	Quantity	Part Number	Reference Number	Description	Quantity	Part Number
1.	Radial Plate	2	10-4076-1	11.	Nut, Hex, Small	6	15-5052-1
2.	Tube, Large (swaged)	1	10-1113-1	12.	Lockwasher, Internal Tooth, Large	6	15-7008-1
3.	Tube, Small (swaged)	1	10-1121-0	13.	Lockwasher, Internal Tooth, Medium	4	15-7152-1
4.	Tube, Small (unswaged)	3	10-1122-0	14.	Lockwasher, Internal Tooth, Small	5	15-7085-1
5.	Caplug	3	15-8106-1	15.	Base and Tube Assembly	1	5-0305-1
6.	Screw, Round Head, Large	3	15-6218-1	16.	Top Hat Radial	3	10-0114-2
7.	Screw, Hex Head	3	15-6050-1	17.	Top Radiator Assembly	1	5-0015-2
8.	Screw, Round Head, Small	1	15-6048-1	18.	Lockwasher, Split	4	15-7107-1
9.	Screw, Sheet Metal	5	15-6086-1	19.	Nut, Hex, Large	4	15-5162-1
10.	U-Bolt	2	15-6042-2				

WHERE TO MOUNT YOUR ANTENNA?

Obviously, you should mount your antenna mast at a location that gives the best mechanical support and where it enables the signal to clear large objects. Usually this will be on the roof, secured to a gable or to a chimney. If the chimney emits a large volume of smoke and soot, this could form conductive deposits on the antenna elements that could lower its efficiency. To mount the mast securely, **you must use guy wires,** especially with masts over 10 feet (3 m) high.

FCC limitations on antenna structures state that the top of a **directional antenna** shall not exceed 20 feet (6 m) in height above ground level or any man-made structure or natural formation. In other words, the antenna can be on top of any size building, **but no more than 20 feet (6 m) above its mounting.**

An **omni-directional antenna** can be mounted at a maximum height of 60 feet (18 m) above ground level provided:

1. The antenna site is located more than 1-1/4 miles (2 km) from the nearest airport runway, and,
2. The ground elevation above mean sea level of the antenna site is no greater than that of the nearest airport.

If you do not satisfy both conditions, then **do not mount your antenna higher than 20 feet (6 m) above ground** unless you first calculate the maximum allowable antenna height. You may contact the local airport officials, the FAA, or the FCC for assistance in determining the maximum height. You may also follow the "step-by-step method" in the FCC's Bulletin 1001h to compute the maximum allowable height. This bulletin may be obtained by sending a written request to the FCC.

If you choose to mount this type of antenna on a building or a nearby tree, there's a different twist to the rules.

Let's say you plan to mount the antenna on a building 120 feet (36 m) high. You can mount the antenna on top of the building as long as its top does not exceed the building height by more than 20 feet (6 m). However, if the building or tree is only 20 feet (6 m) high, you can extend the top of the antenna another 40 feet (12 m) – making a total of 60 feet (18 m), provided that you satisfy conditions 1 and 2 above.

Continuing with this runway bit – if there's a building within 1-1/4 miles (2 km) of the runway and it is 200 feet (60 m) high, you are not bound to the 1 foot (0.3 m) for every 100 feet (30 m) if you mount the antenna on the roof of this building. Here, you are limited only to no more than 20 feet (6 m) above the top of the building.

HINTS AND TIPS

If your coax cable does not have a connector on it, here are some tips on how to install it:

Connect a PL-259 connector to the coax cable as follows:

1. Place the threaded shell of the connector on the cable as shown in Figure 2.

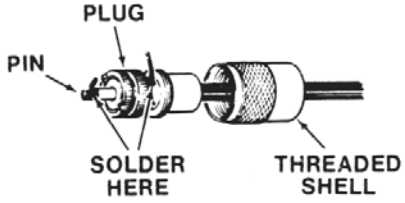


FIGURE 2

2. Carefully remove 1" (2.5 cm) of outer cable insulation.
3. Separate the braided wire from the inner insulation and twist it to form a smooth, pointed tip.
4. Remove 1/2" (1.3 cm) of inner insulation from the center wire.
5. Carefully insert both the center wire and the braided wire into the connector. Guide the wires so that the braided wire exits at a hole in the side of the connector and the center wire exits from the pin (refer to Figure 2).
6. Solder at the points shown in Figure 2 and trim off the excess wire.
7. Screw the threaded shell onto the connector.

SPECIAL NOTE: To prolong the life of this product in or around coastal areas, we recommend that all hardware be encapsulated with silicone rubber compound such as DOW - CORNING silastic rubber or G. E. silicone seal to prevent atmospheric deterioration.

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