



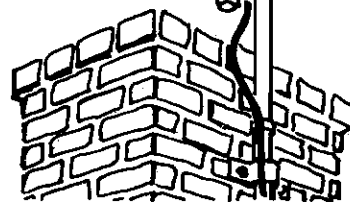
**ARCHER<sup>®</sup>**

**CROSSBOW  
III**

**3-ELEMENT  
BEAM  
CB ANTENNA**

**CAT. NO. 21-933**

CUSTOM MANUFACTURED IN USA FOR  
RADIO SHACK  A TANDY CORPORATION COMPANY.



## ASSEMBLY INSTRUCTIONS

Before you begin to put your Beam Antenna together, here are a few of the things you should do:

1. Determine where and how you will install it- with a rotor vertical or horizontal, on a free-standing mast or on top of your house or office.
2. Separate all of the parts — check them against the Parts List — then organize them so that all of the same size and type are together
3. During assembly, position all medium diameter tubes (Illustration No. 7) so the fastening holes are positioned upward (See F for an example).

**A** Locate the two large pieces of tubing, Illustration Numbers (5 and 6). These are for the Boom. Locate a slightly thinner piece of slotted tubing, 7" long. Deburr the inside edges of the long tubing where the weld bead is (use a knife or other sharp edged tool for this). Refer to "A" and attach the Boom pieces to each other by sliding the slotted tubing inside each other. Be sure this assembly fits snug and tight.

**B** Mount the two Boom-Mast Brackets over the center of the above Boom joint — as shown in "B". Fasten securely with 4 large bolts (one at each corner), lockwashers and nuts. Place the large U-bolts into the holes provided and loosely fasten with lockwashers and nuts.

**C** Position the above assembly so the longer end of the Boom is to your right (as viewed in the major illustration). Locate 5 equal-length medium diameter tubes (Illustration No. 7), the Gamma Element assembly (8), a saddle bracket and small U-bolts. Slide the end of one of the medium diameter tubes into the open end of the Gamma Element assembly (#7 fitting into the end of #8 as shown in "C"). Fasten #7 to the Gamma Element tubing with a long screw, lockwasher and nut. Position the Gamma Element over the right end of the Boom assembly as shown and mount with a small U-bolt, 2 lockwashers and nuts. Before fastening securely, position this assembly so it will be spaced 17" from the center of the large U-bolts (in the center of the Boom assembly); tighten nuts securely.

**D** Use 2 more of the medium diameter tubes and fasten together using a 10" large diameter tube (slip medium tubes inside the larger tube). Fasten together as shown in "D" using 2 long screws, a saddle bracket, small U-bolts and 4 lockwashers and nuts. Before tightening the U-bolt nuts, slip the assembly over the right end of the Boom. This will become the Director Element Assembly; space it 58-1/4" from the center of the Gamma Element/Driver Element assembly and be sure it is parallel with and on the same plane as the Driven Element Assembly. Tighten hardware securely.

Assemble the remaining medium diameter tubes with a 10" large tube in the same manner. Place over the left end of the Boom and fasten as above. This will become the Reflector Element Assembly; position it 65" from the center of the large U-Bolt (where the Mast will be). Be sure this element is parallel with and on the same plane as the other two elements; fasten hardware securely.

**E** The balance of the tubing is illustrated in "E" and the major drawing. Use the longest thin tubing (#1) and fasten to the ends of the Reflector Element Assembly using a self-tapping screw and lockwasher with each to secure the ends into #7. See "F" for an illustration of how this screw fits.

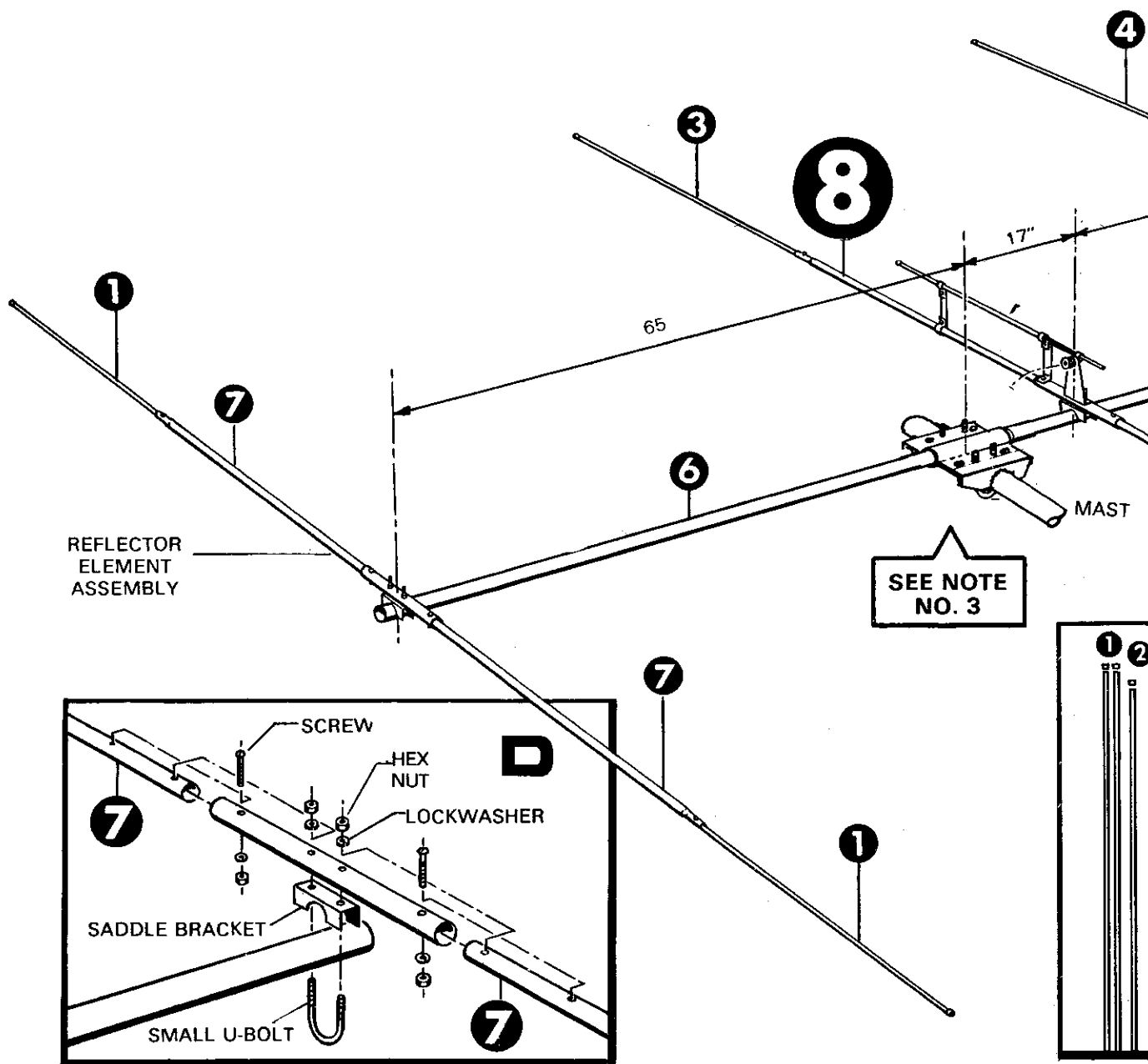
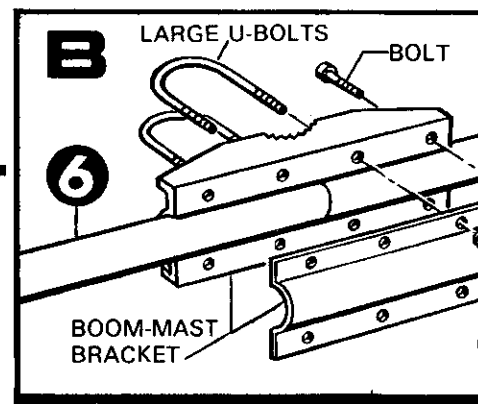
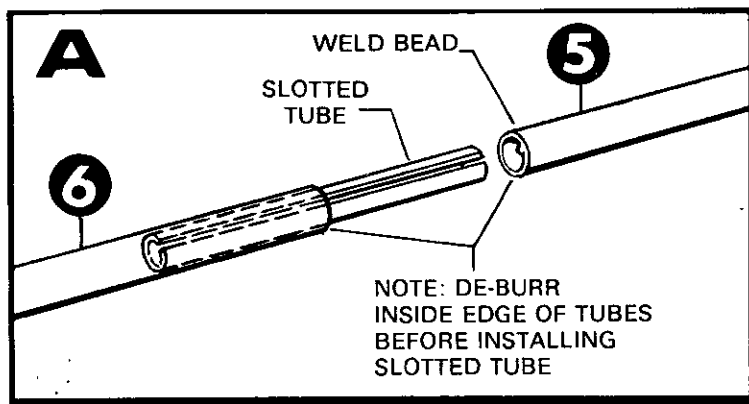
Use the shortest tubing (#4) and fasten to the ends of the Director Element Assembly — secure with self-tapping screws and lockwashers as above.

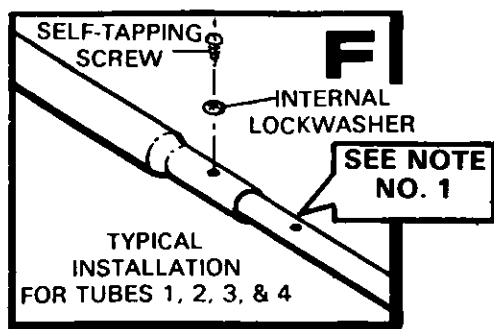
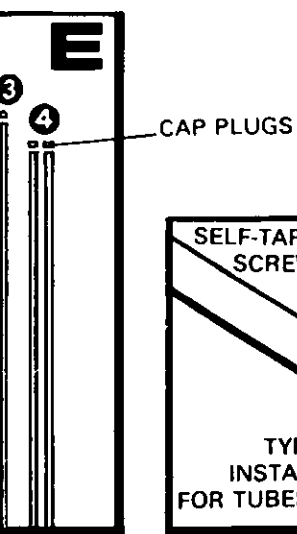
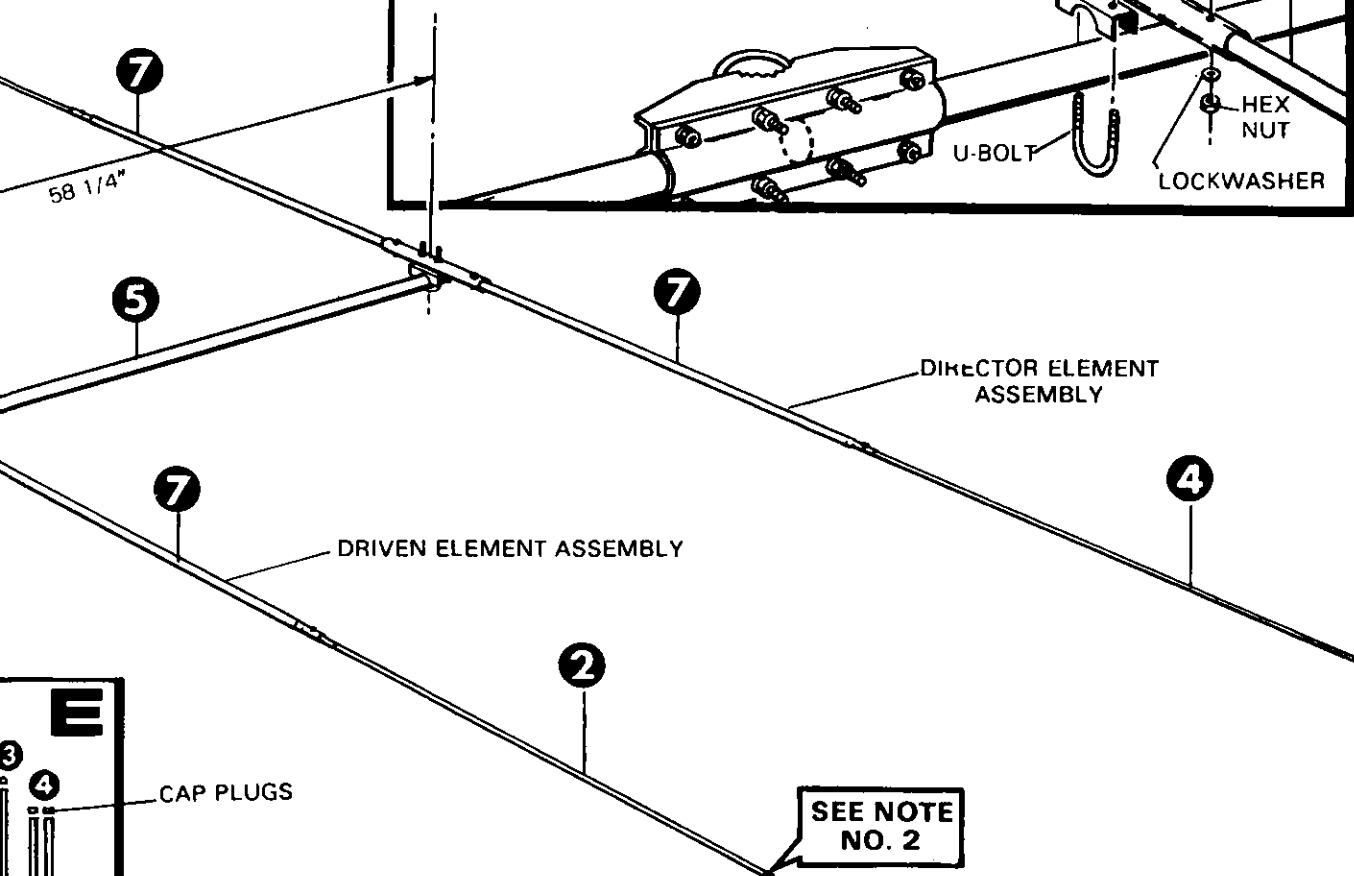
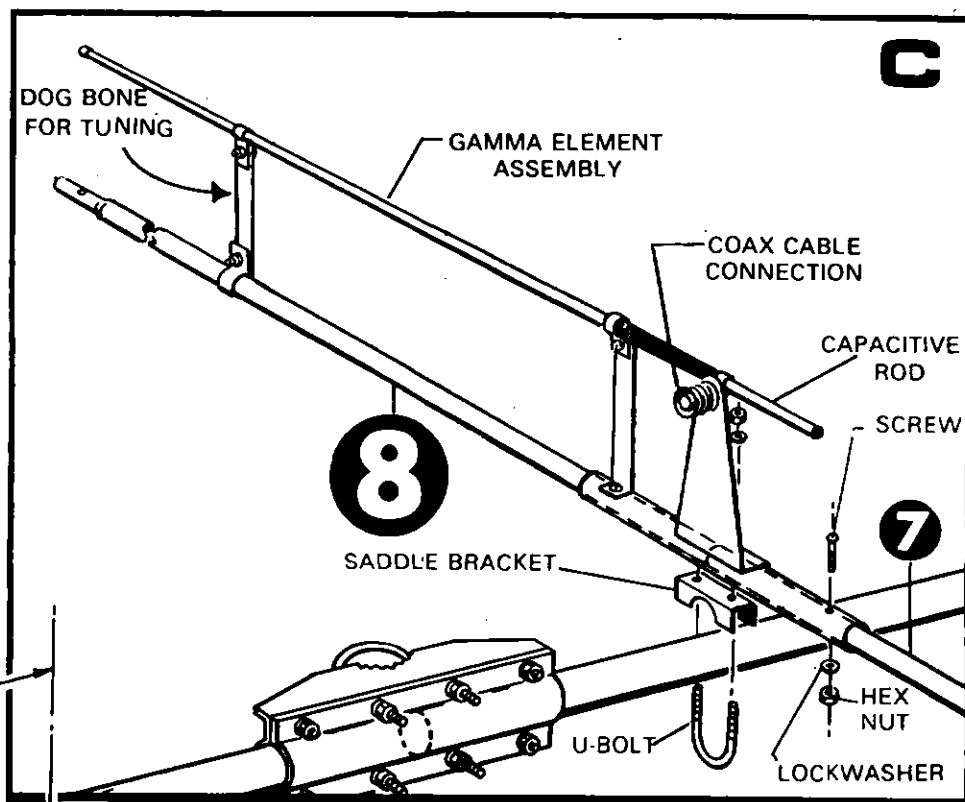
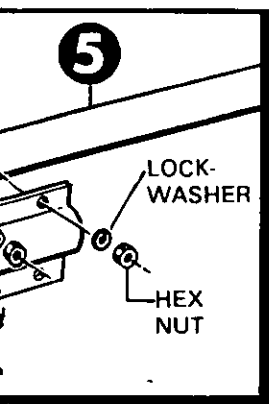
**F** There are 2 tubes left-install the shorter one (#3) into the end of the Gamma Element (#8) tubing. The last tube (#2) has two holes for the screw fastening. See NOTE 1, below for explanation of which hole to use as you fasten this final part in place.

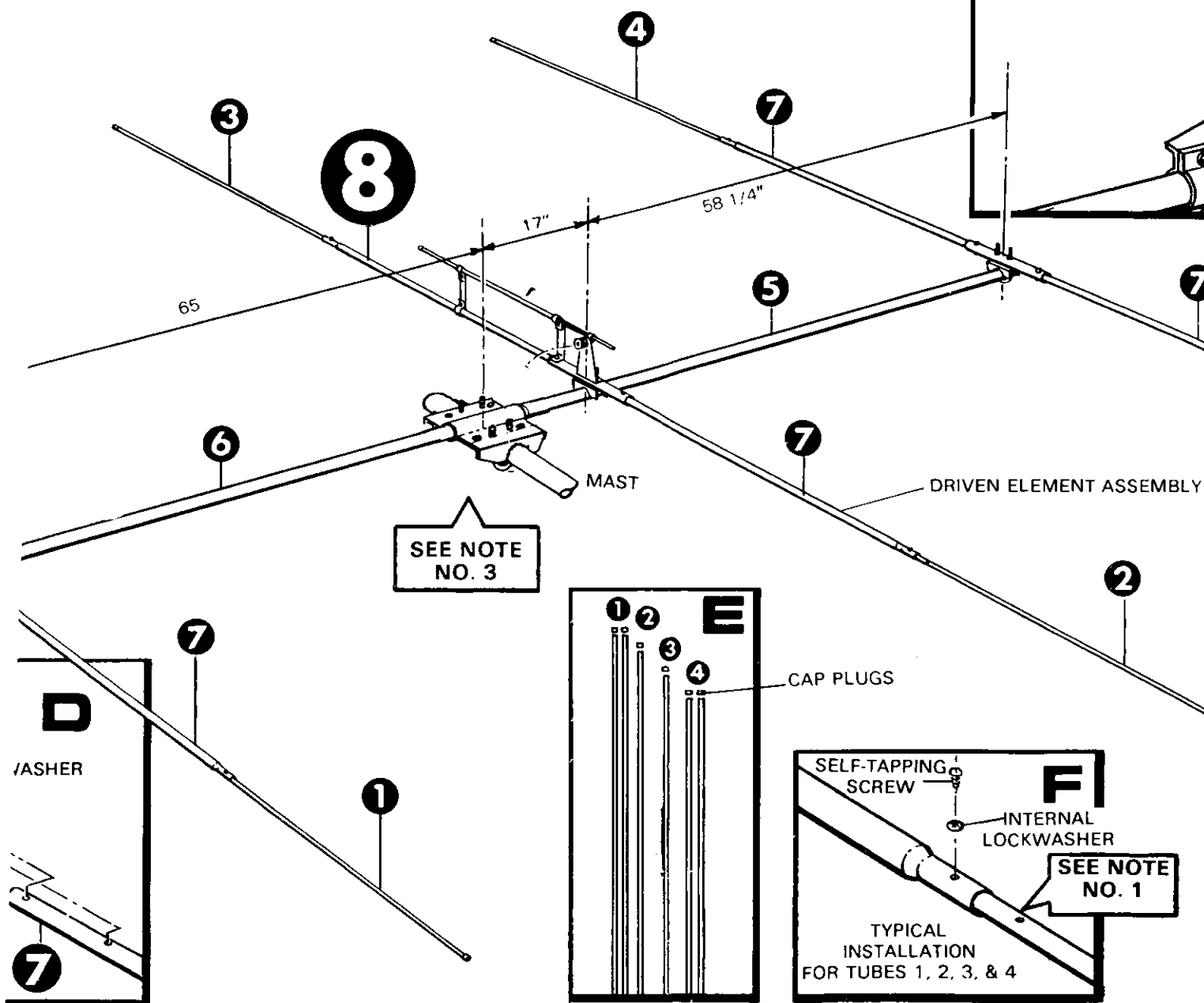
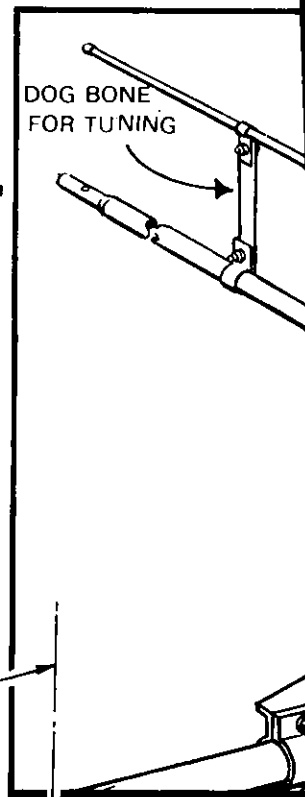
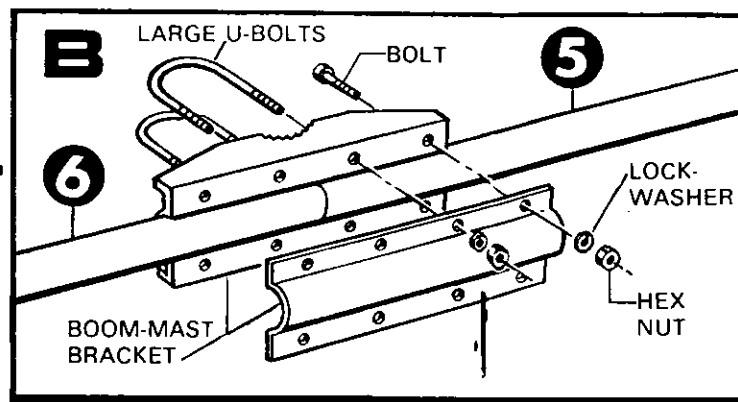
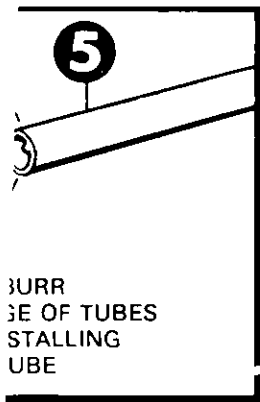
**NOTE 1:** If you are going to position the Antenna vertically, use the first (end) hole in #2 tubing; for horizontal positioning, use the second hole.

**NOTE 2:** Install end caps over the ends of the thin tubes if you mount the antenna horizontally. For vertical mounting, don't use the end caps over the bottom ends of the thin tubes (they would hold rain and moisture inside the tubes).

**NOTE 3:** The major illustration shows assembly for horizontal positioning. If you are going to use vertical position, loosen the Boom-Mast Bracket assembly and rotate it so the Gamma Element will face away from the Mast; then retighten the nuts.







## MOUNTING THE ANTENNA

See the illustration on the front of these instructions. If you use the Horizontal position — the Gamma Element must face DOWN. For Vertical mounting — the Gamma Element must be AWAY from the Mast.

For best results, we recommend that you use an Antenna Rotor such as Radio Shack's Catalog Number 15-1220. Also, Radio Shack has a complete selection of masts and other installation accessories. We remind you that FCC states that the top of a Beam antenna must not be more than 20 feet above the top of your house or office — or if you mount it on a free-standing mast on the ground, its top can only be 20 feet above ground level.

If you are communicating with another station using a beam antenna, you are better off if both of you use the horizontal position. If you communicate with stations which have the more common vertical whip or ground plane antenna, you'll get better results with them if you use the vertical position.

Coax cable is not provided with your Beam. We recommend that you use foam type RG-58/U coax cable for lengths under 40 feet. For more than 40 feet, use RG-8/U.

As designed, your antenna will provide a gain of about 9 dB (over the entire CB Band). Its front-to-back ratio is about 25 dB — so you should really make a big hole in the CB airwaves!

## ANTENNA TUNING

The antenna Tuning has been pre-set at the factory for optimum performance. But if the S.W.R. appears to be unsatisfactory, you can retune it as follows.

Connect an SWR meter into your coax cable line. Measure the SWR on channels 1, 12 and 23 and record it. The SWR on channels 1 and 23 should be the same but lower on channel 12. If not, relocate the dog bone (Shown in main illustration), about 1/4" and remeasure the SWR. Continue to relocate the dog bone until the SWR readings on channel 1 and 23 are the same. With the lowest reading on channel 12. If the SWR is still unsatisfactory, move the capacitive rod in or out 1/8" at a time to achieve the lowest SWR on channel 12.

## PARTS LIST

DESCRIPTION	Quantity	Reference Number (If specifically identified in Illustrations)
NOTE: Where the Illustrations include a number reference for a part, it is noted below as Reference.		
Bolt, large (1/4-20 x 3/4")	4	
Bracket, Boom Mast	2	
Bracket, saddle	3	
Cap. end, 7/16" (for ends of tubes)	6	
Gamma Element Assembly	1	8
Lockwasher #8	6	
Lockwasher 1/4"	15	
Lockwasher, 5/16" for large U-bolt	4	
Nut, 1/4"-20	15	
Nut, 5/16-20 for large U-bolts	4	
Screw, long (1/4-20 x 1-1/8")	5	
Screw, self-tapping, #8	6	
Tubing, large, long for Boom (1-1/4" x 77")	1	5
Tubing, large, short for Boom (1-1/4" x 67")	1	6
Tubing, large (3/4" x 10")	2	7
Tubing, medium (5/8" x 55")	5	
Tubing, slotted, for Boom (1-1/8" x 7")	1	
Tubing, thin, medium length with 2 holes (7/16" x 56")	1	2
Tubing, thin, medium length with 1 hole (7/16" x 52-3/4")	1	3
Tubing, thin, long (7/16" x 59")	2	4
Tubing, thin, short (7/16" x 48")	2	
U-bolt, small	3	
U-bolt, large	2	