

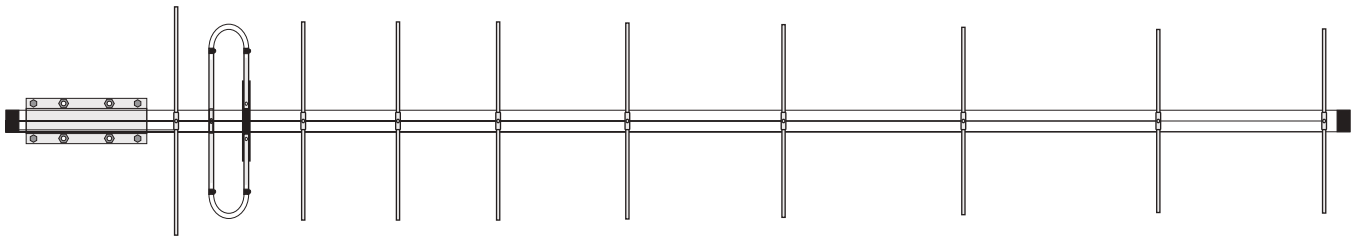
Cushcraft

Amateur Radio Antennas

LFA-440M10EL

10 Element Loop Feed Beam
For 440 Mhz

INSTRUCTION MANUAL



CAUTION: Read All Instructions Before Operating Equipment

Cushcraft

Amateur Radio Antennas

308 Industrial Park Road
Starkville, MS 39759 USA
Tel: 662-323-9538 Fax: 662-323-6551

GENERAL DESCRIPTION

The LFA (Loop Fed Array) Low-Noise Yagi is very different from the traditional dipole fed Yagi in many ways with its primary benefit being unwanted noise rejection. The LFA has a rectangular shaped, full wave loop driven element that is laid flat on the boom between and in-line with the parasitic elements . Then there is the way in which the loop functions. The smaller end sections which run parallel to the boom, are engineered to be 180 degrees out-of-phase with each other. This provides the same effect as is seen within ladder-line feeder; each side cancels the other out and therefore, minimum radiation occurs. In practice this translates to highly suppressed side lobes and side-on signal rejection. This feature also plays a role in reducing F/B (Front to Back ratio), F/R (Front to Rear ratio) and broad-banding of the antenna too. It is these attributes which help give the LFA class-leading all-round performance at almost any boom length and for any given band.

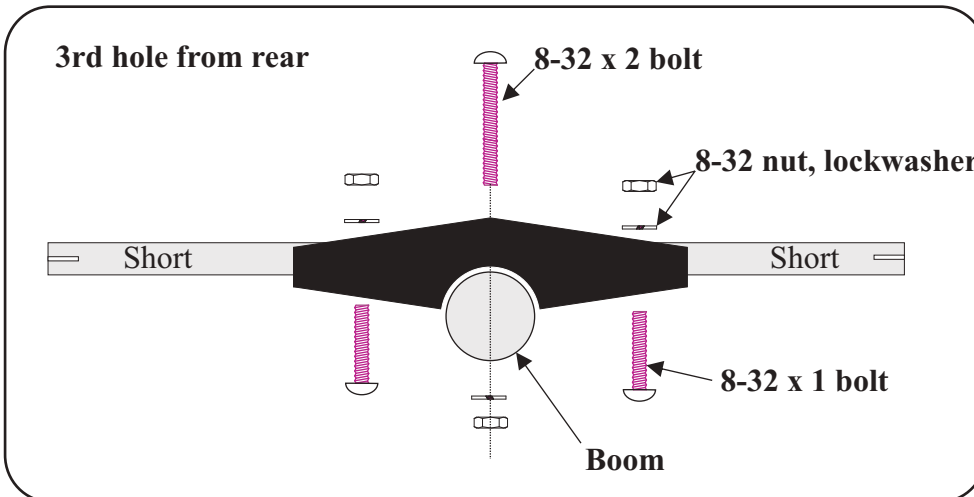
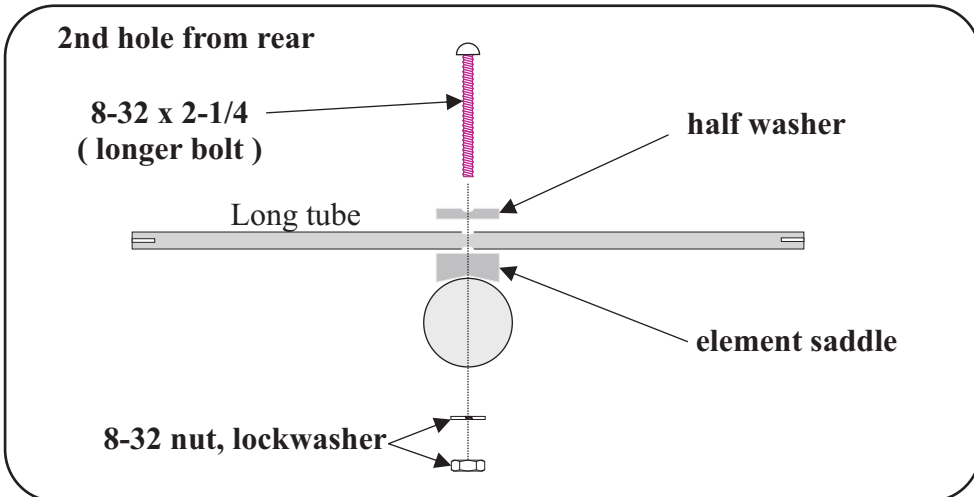
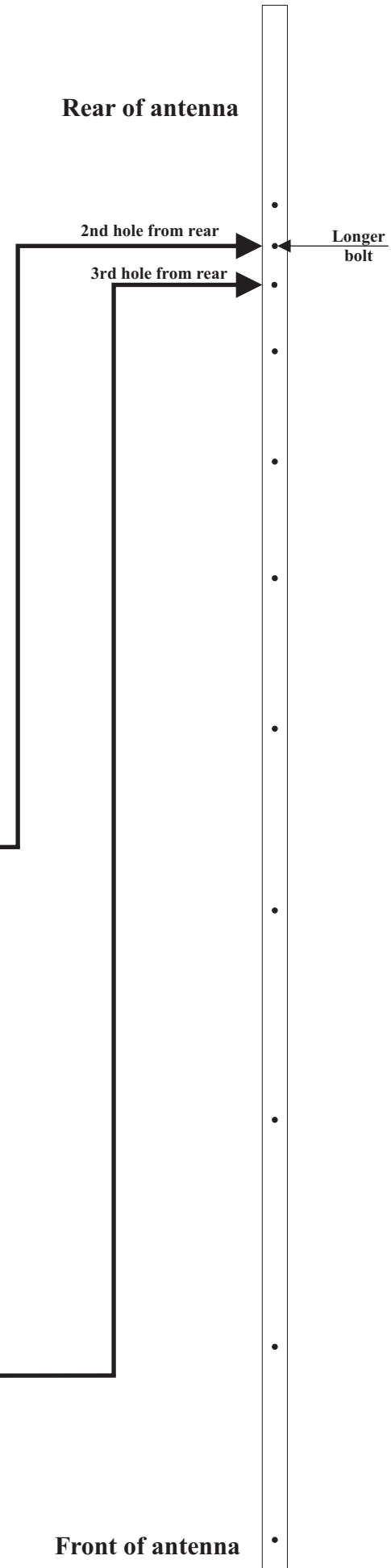
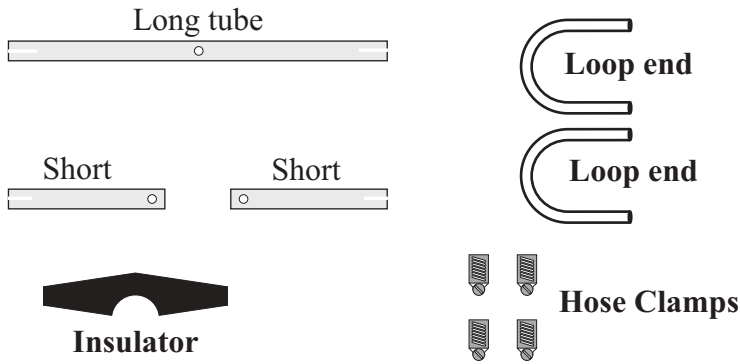
UNPACKING

Unpack the antenna and check the parts against the Parts List and the drawings. This will simplify the antenna assembly. Parts have been separated when possible to aid in assembly. Make sure you have the necessary room to assemble the antenna before unpacking. This antenna will be very long when finished, don't try to assemble it inside your house and then move it outside. A car garage with a couple of saw horses or other means of support will make it easy to handle the antenna when putting it together. Assembly over grass is not recommended. There are lots of small things that can get lost forever in grass. Some parts may have extras included so don't worry if you have some left over when your done.

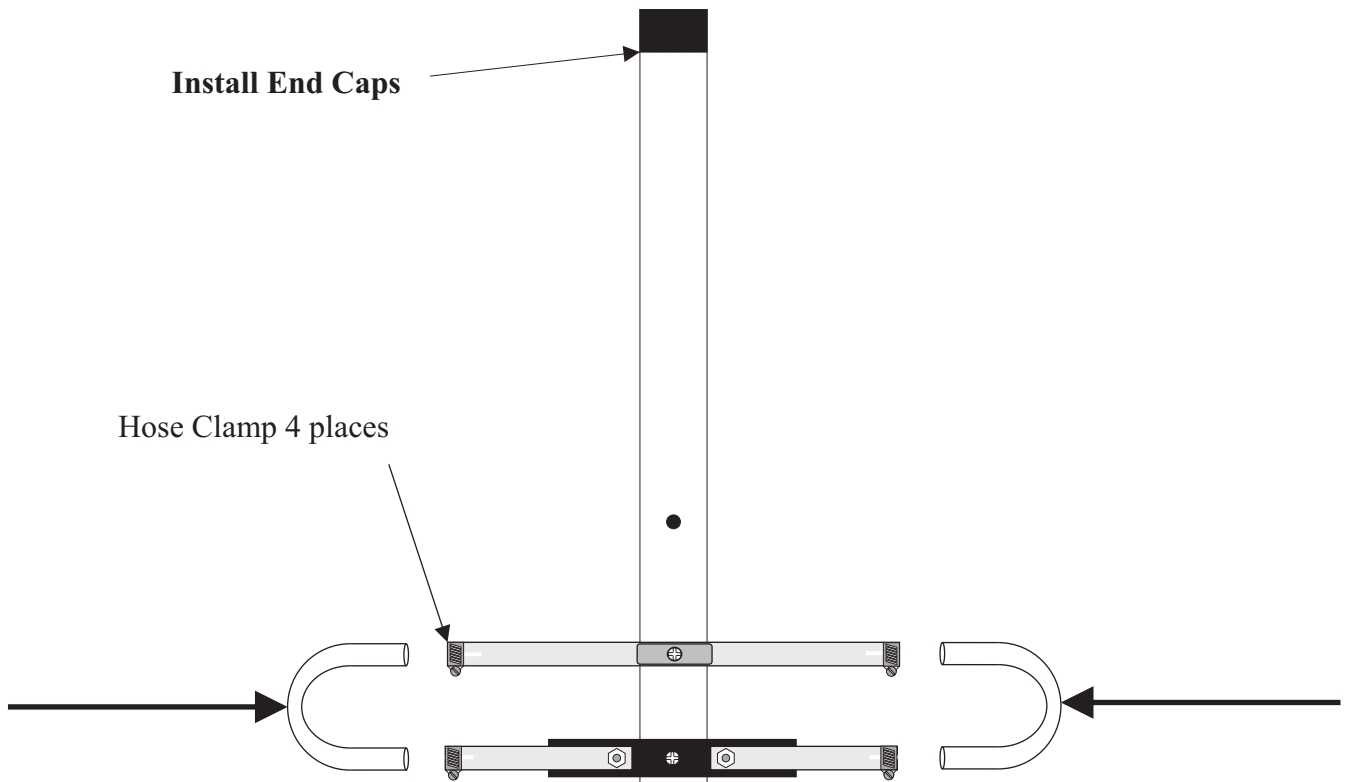
part #	Description	Qty	745-3104S	#4 Hose Clamp	4
455630	1-1/4 Caplug	2	010229	8-32 x 1	2
465420	Driver Insulator	1	014764	8-32 X 2-1/4	1
161035	Driven Element A 3-3/4"	2	010120	8-32 x 2	10
161090	Driven Element B 9"	1	190028	Half Washer	10
161080	440 Loop End 3/8 X 8"	2	190026	Element Saddle	10
161780	BOOM 1-1/4 X .035 X 78	1	011941	Lockwasher #8	15
385142-1	Boom to Mast	1	161325	3/16 rod ELEMENT R1	13-1/4
385144-1	Backup Plate	1	161218	3/16 rod ELEMENT R2	12-3/16
540067	U-bolt	2	161175	3/16 rod ELEMENT R3	11-3/4
564792	5/16 Split washer	4	161150	3/16 rod ELEMENT R4	11-1/2
555747	5/16 Hex Nut	4	161137	3/16 rod ELEMENT R5	11-3/8
505266	1/4-20 X 3/4 Bolt	4	161118	3/16 rod ELEMENT R6	11-3/16
554099	1/4-20 Hex Nut	4	161087	3/16 rod ELEMENT R7	10-7/8
562961	1/4 Lockwasher	4	161062	3/16 rod ELEMENT R8	10-5/8
556990	8-32 Hex Nut	15	161068	3/16 rod ELEMENT R9	10-11/16

ANTENNA ASSEMBLY

Select the boom and identify the front and rear. The rear of the antenna where the mast bracket is, does not have any holes. Assemble the driven element first. Locate the parts listed below and assemble as shown on the boom.



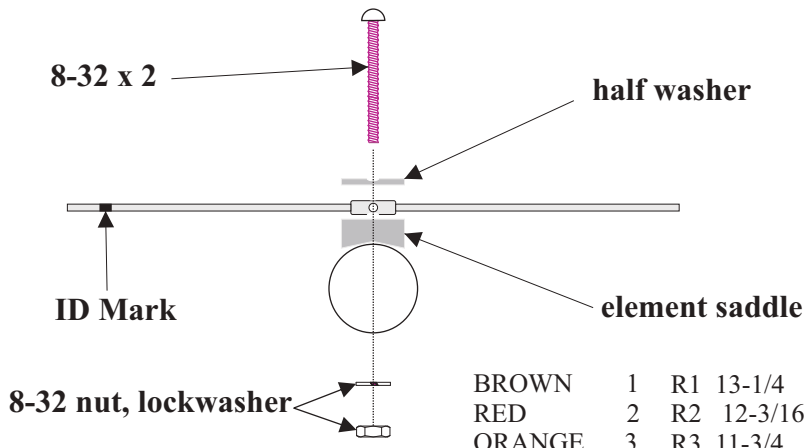
Install End Caps



Slide the loop ends into the tubes. Put a #4 hose clamp over each tube before inserting the loop end. Do not tighten the hose clamps. the loop ends will need to move for tuning.

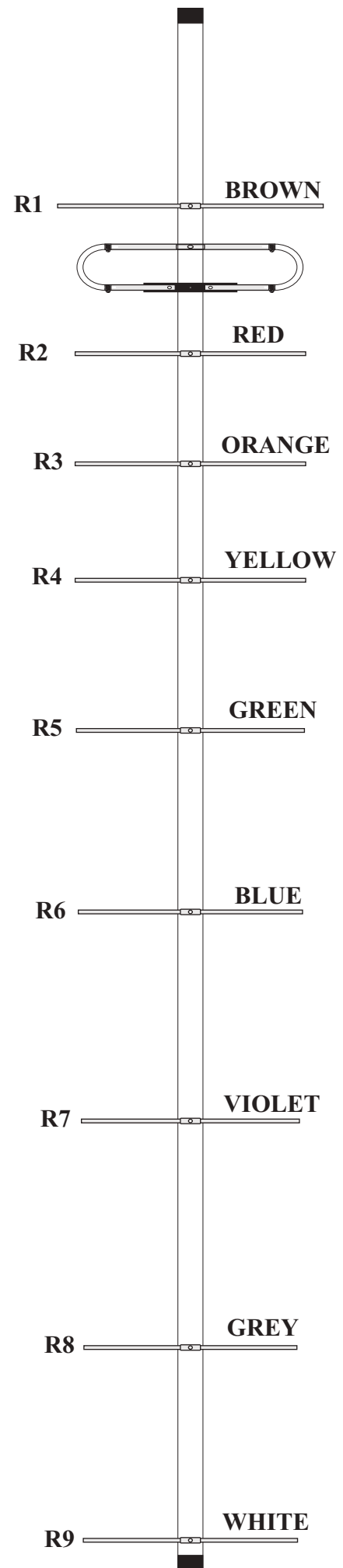
INSTALL THE ELEMENTS

Identifying the elements is easy using the resistor color code. Install them on the boom in the proper location using the half washer, saddle and 8-32 x 2 inch bolts nuts and lock washers. D8 is longer than D7, this is on purpose.



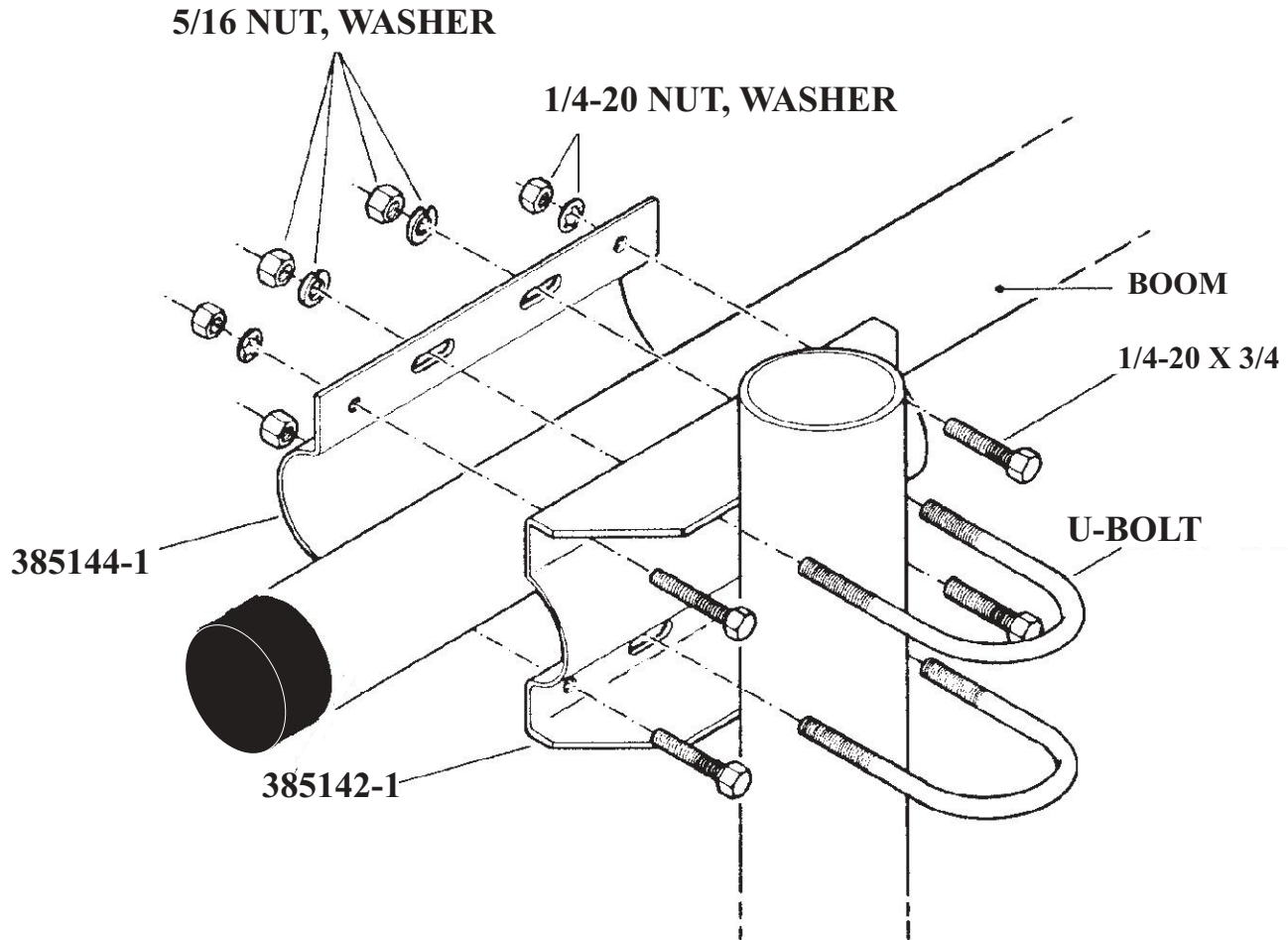
Color code chart

BROWN	1	R1	13-1/4	INCH
RED	2	R2	12-3/16	INCH
ORANGE	3	R3	11-3/4	INCH
YELLOW	4	R4	11-1/2	INCH
GREEN	5	R5	11-3/8	INCH
BLUE	6	R6	11-3/16	INCH
VILOET	7	R7	10-7/8	INCH
GREY	8	R8	10-5/8	INCH
WHITE	9	R9	10-11/16	INCH

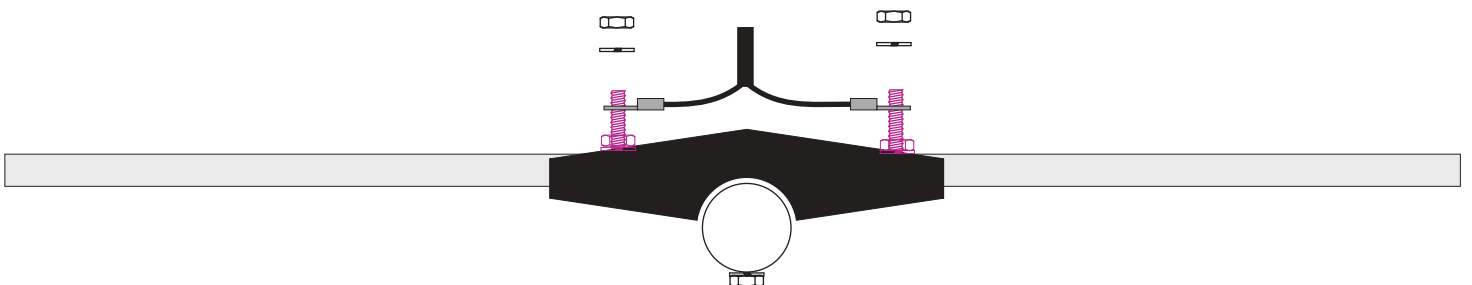


MAST BRACKET ASSEMBLY

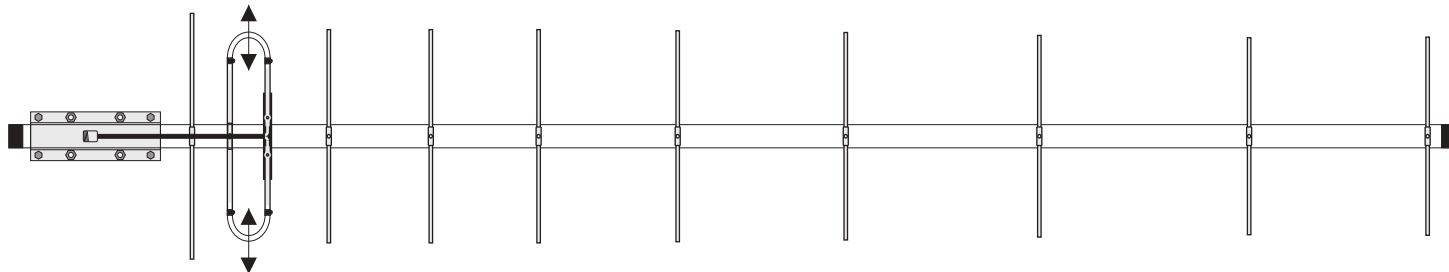
Attach the mast bracket as shown. Make sure the elements are orientated correctly before tightening the 1/4-20 bolts.



Attach the coax pigtail to the feed loop using the remaining 8-32 nuts and lock washers. Make the distance of the exposed conductors as short as possible.

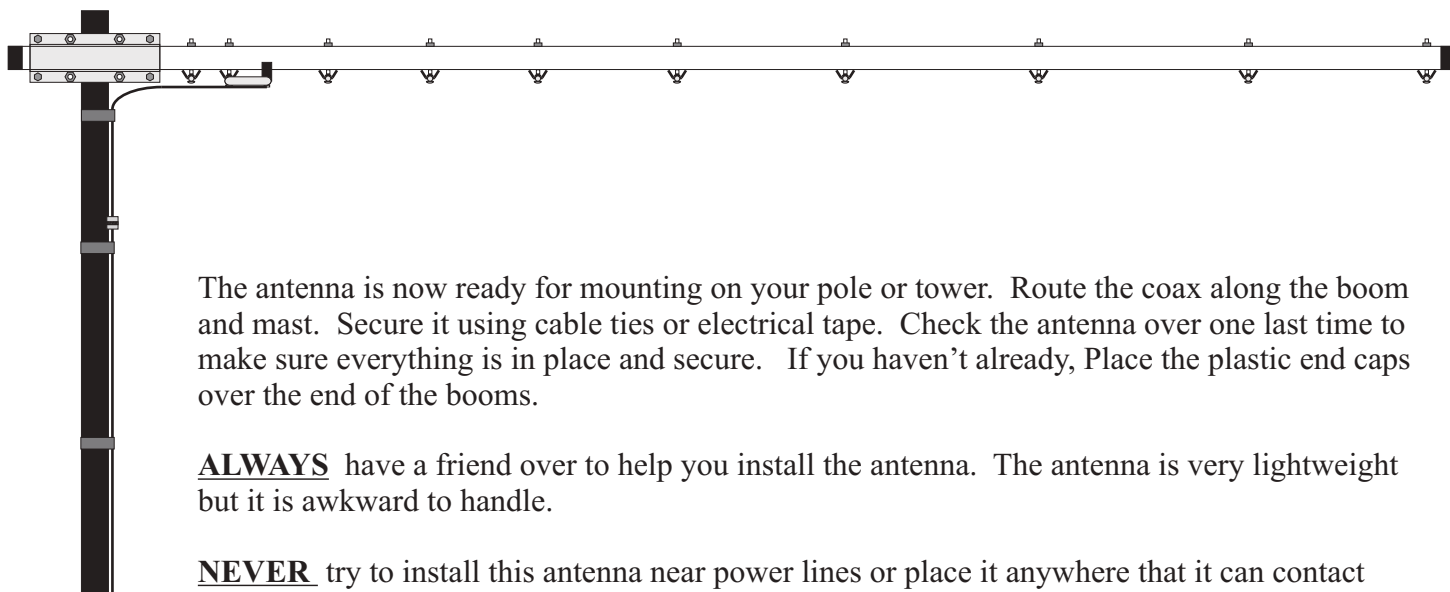


Move out to shift frequency down. Move in to shift frequency up.
Move both sides equally at the same time.



Tuning

Your antenna is now ready for tuning. Remove it from your assembly area and mount it on a temporary mast at least 8 feet off the ground. Using a SWR analyzer or radio and SWR meter, check for a dip in swr at or about 430-440 MHZ. You should see a dip in the SWR. If not, Check all connections and retest. If the dip is too low in frequency, move the loop ends in toward the boom. Move each side the same and keep them both the same distance from the boom. If the dip is too high in frequency, move the loop ends out away from the boom. It is not necessary to tighten the clamps each time for tuning. Once the dip is centered where you want it, tighten the clamps on the tubes. Do not use a wrench or powered device to tighten the clamps. A nut driver or screwdriver is plenty to do the job.



The antenna is now ready for mounting on your pole or tower. Route the coax along the boom and mast. Secure it using cable ties or electrical tape. Check the antenna over one last time to make sure everything is in place and secure. If you haven't already, Place the plastic end caps over the end of the booms.

ALWAYS have a friend over to help you install the antenna. The antenna is very lightweight but it is awkward to handle.

NEVER try to install this antenna near power lines or place it anywhere that it can contact power lines if it were to fall.

LIMITED WARRANTY

Cushcraft Amateur Radio Antennas, 308 Industrial Park Rd., Starkville, MS 39759, warrants to the original consumer purchaser for one year from date of purchase that each Cushcraft antenna is free of defects in materials or workmanship. If, in the judgment of Cushcraft, any such antenna is defective, then Cushcraft Amateur Radio Antennas will, at its option, repair or replace the antenna at its expense within thirty days of the date the antenna is returned (at purchasers expense) to Cushcraft or one of its authorized representatives. This warranty is in lieu of all other expressed warranties, any implied warranty is limited in duration to one year. Cushcraft Amateur Radio Antennas shall not be liable for any incidental or consequential damages that may result from a defect. Some states do not allow limitations on how long an implied warranty lasts or exclusions or limitations of incidental or consequential damages, so the above limitation and exclusion may not apply to you. This warranty gives you specific legal rights, and you may also have other rights that vary from state to state. This warranty does not extend to any products that have been subject to misuse, neglect, accident or improper installation. Any repairs or alterations outside of the Cushcraft factory will nullify this warranty.