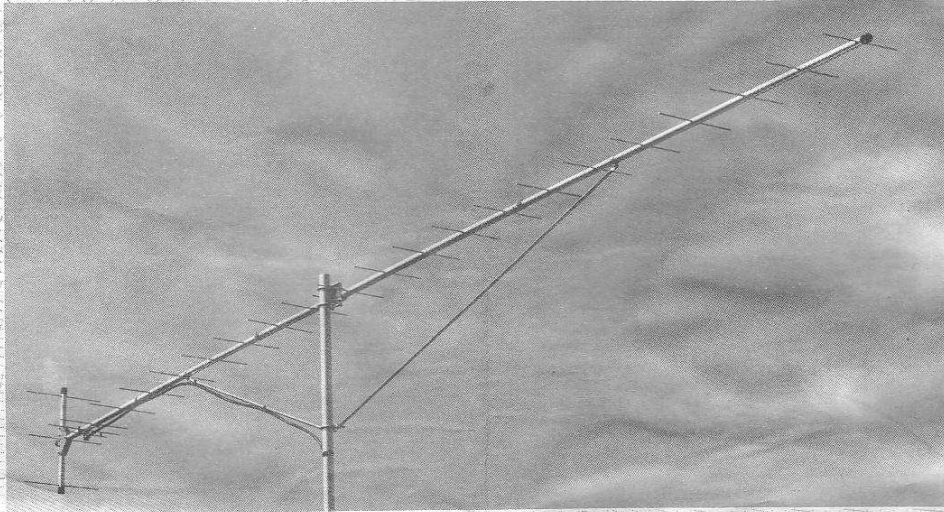


ASSEMBLY AND INSTALLATION INSTRUCTIONS



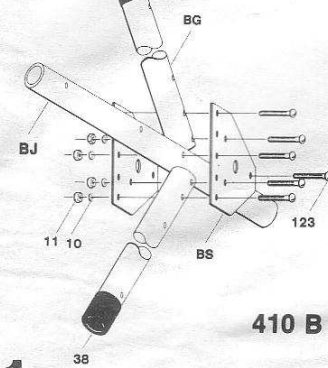
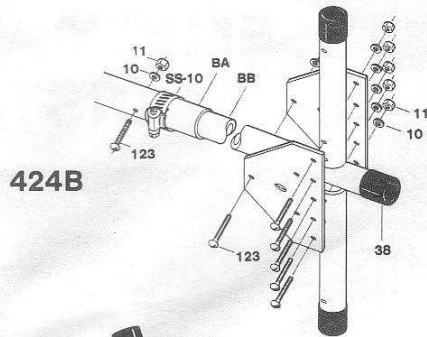
424 B/410 B Yagi Antenna



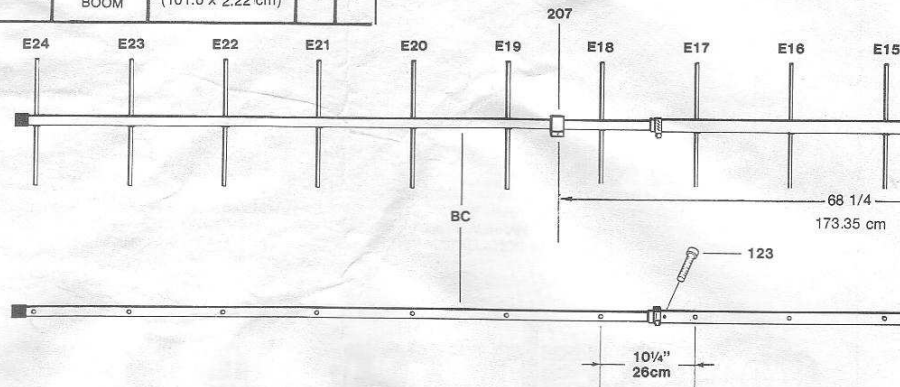
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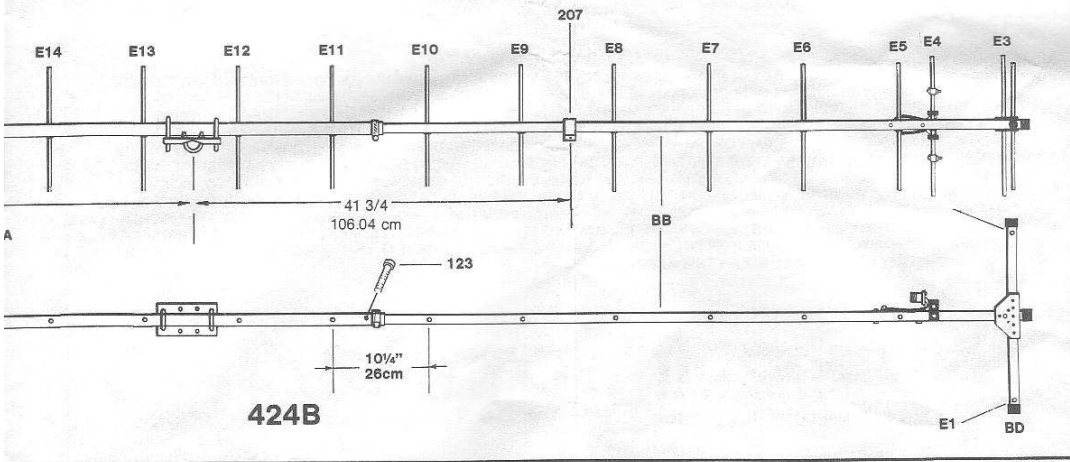
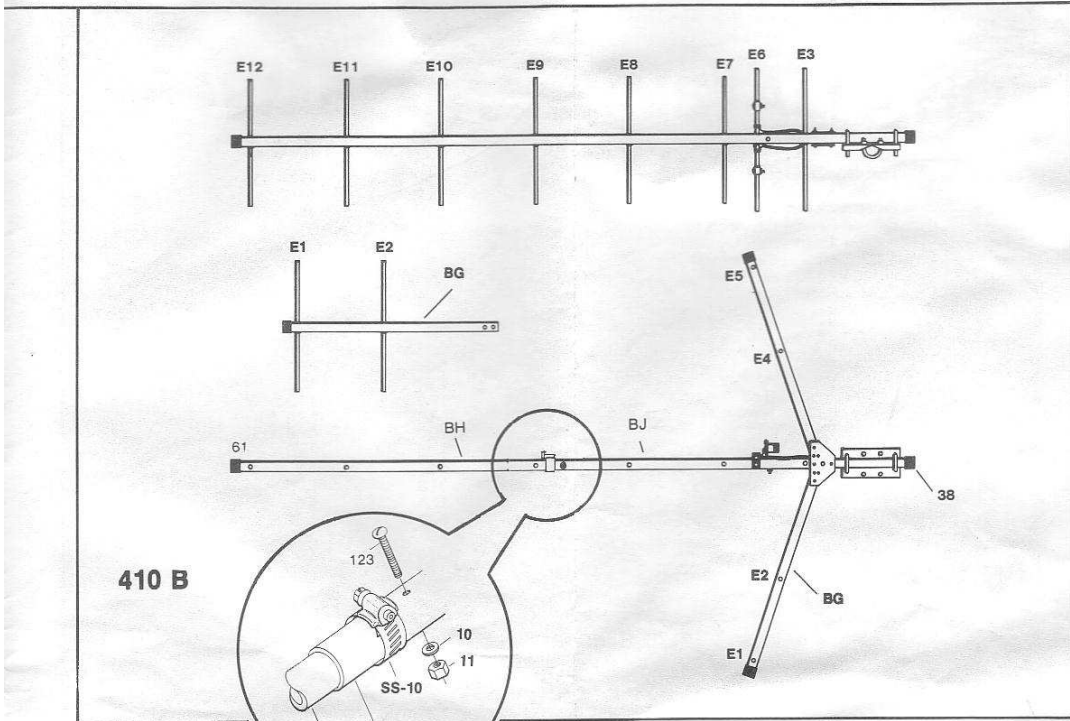
P/N	DISPLAY	DESC.	SIZE	QTY	
				424B	410B
61		END CAP	7/8" (2.22 cm)	0	1
BS		REFLECTOR BRACKET	3" x 5" (7.62 x 12.70cm)	2	2
10		LOCK WASHER	#8	8	7
11		HEX NUT	#8-32	8	7
123		MACHINE SCREW	8-32 x 1 1/2 (3.8cm)	8	7
SS-10		WORM CLAMP	1 1/4" (3.2cm)	2	1
38		END CAP	1" (2.54cm)	4	4
207		BRACE CLAMP	1" (2.54cm)	2	0
BA		CENTER BOOM	72" x 1 1/8" (182.88 x 2.86cm)	1	0
BB		REAR BOOM	72" x 1" (182.88 x 2.54cm)	1	0
BC		FRONT BOOM	72" x 1" (182.88 x 2.54cm)	1	0
BD		424B REFLECTOR SUPPORT	8" x 1" (20.32 x 2.54cm)	2	0
BG		410B REFLECTOR SUPPORT	22 1/2" x 1" (57.15 x 2.54cm)	0	2
BJ		REAR BOOM	36" x 1" (91.44 x 2.54 cm)	0	1
BH		FRONT BOOM	40" x 7/8" (101.6 x 2.22 cm)	0	1

Boom Assembly



1





Your Cushcraft antenna is manufactured to give top performance and trouble free service. The antenna will perform as specified, if the instructions and suggestions are followed, and if care is used in assembly and installation.

MASTING

The mast mount bracket will accommodate up to a 2 inch (5.1 cm) mast. 1½ inch (3.8cm) or larger tubing should be used for your mast.

ROTATOR

Choose a good quality rotator designed for use with amateur radio antenna installations.

LOCATION

Location of the antenna is very important. Surrounding objects such as trees, power lines, other antennas, etc, will seriously reduce efficiency. To minimize the effects of surrounding objects, mount the antenna as high and in the clear as possible. If metal guy wires are used, they should be broken with strain insulators. **WARNING: THIS ANTENNA IS AN ELECTRICAL CONDUCTOR, CONTACT WITH POWER LINES CAN RESULT IN DEATH, OR SERIOUS INJURY. DO NOT INSTALL THIS ANTENNA WHERE THERE IS ANY POSSIBILITY OF CONTACT WITH OR HIGH VOLTAGE ARC-OVER FROM POWER CABLES OR SERVICE DROPS TO BUILDINGS. THE ANTENNA, SUPPORTING MAST AND/OR TOWER MUST NOT BE CLOSE TO ANY POWER LINES DURING INSTALLATION REMOVAL OR IN THE EVENT PART OF THE SYSTEM SHOULD ACCIDENTALLY FALL. FOLLOW THE GUIDELINES FOR ANTENNA INSTALLATIONS RECOMMENDED BY THE U.S. CONSUMER PRODUCT SAFETY COMMISSION AND LISTED IN THE ENCLOSED PAMPHLET.**

Plan your installation carefully. If you use volunteer helpers be sure that they are qualified to assist you. Make certain that everyone understands that you are the boss and that they must follow your instructions. If you have any doubts at all, employ a professional antenna installation company to install your antenna.

MOUNTING

Several different antennas may be mounted on the same mast. VHF and UHF beams should be mounted at least 5 ft. (1.5m) from other antennas if possible. Do not install 432 beams in close proximity to each other or serious detuning will result.

SYSTEM GROUNDING

Direct grounding of the antenna, mast, and tower is very important. This serves as protection from lightning strikes and static buildup, and from high voltage which is present in the radio equipment connected to the antenna. A good electrical connection should be made to one or more ground rods (or other extensive ground system) directly at the base of the tower or mast, using at least 10AWG ground wire and non-corrosive hardware. For details and safety standards, consult the National Electrical Code.

ASSEMBLY

Follow these steps in sequence and your assembly will go very quickly.

Step 1. Identify and assemble the boom sections as shown in the overview on pages 2 and 7. For model 424B, place a brace clamp (#207) between E8 and E9 also between E18 and E19. The director elements are equally spaced along the boom. Checking the dimension between E10 and E11 will confirm that the boom is correctly assembled. Mount the reflector support booms as pictured. Snap a plastic element insulator (#194) into each element hole. Two are used for each element.

Step 2. Locate and identify the elements using the element assembly chart on page 4. Measure dimension B from the end and place a mark on each element. This task is easiest if you use the metric dimensions. Use the element assembly tool to slide the stainless steel fasteners to these marks. Next insert the elements through the boom in the proper places. Slide an element fastener into position snugly against the insulator on the opposite side of the boom.

Step 3. Locate the proper hole in the rear boom section and attach connector bracket 205 there. For 424 B: This is the small hole on top of the boom nearest to the reflector supports. For 410 B: This is the hole on top of the boom farthest from the reflector supports. The tongue of 205 should face the other hole on the top of the boom where the balun will be secured. Attach connector assembly CA and balun (DB) to the bracket. Place a T-Match spacer (196) on each T-Match rod (198) secure with an element fastener (195). Slide the T-match spacers over the driven element. Secure into place using the T-match clamps (197) and no. 8 hardware. Use the chart in step 3 to determine placement of the T-match clamps. Attach the balun (DB) and CA to the Tmatch rods. Secure the balun to the boom using the plastic cable clamp (204).

Step 4. For 410B: Assemble the mounting plate to the rear of the boom as shown on page 7. Attach the antenna to your mast. Connect your feedline to the antenna and weatherproof. For 424B: Assemble the mounting plate to the boom. Place it in the center of the space between E12 and E13. Assemble the brace hardware. Secure the brace the brace clamps (207) to the boom using the dimensions shown on pages 2 and 7. These dimensions will place the brace U-bolt directly above the mounting plate U-bolts. Attach the antenna to the mast and connect your feedline to the antenna and weatherproof.

**Element Assembly Chart
424B YAGI**

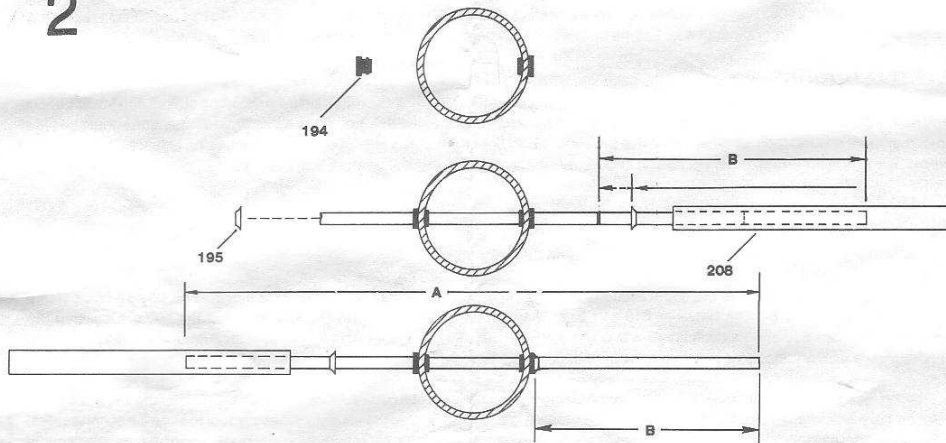
ELEMENT NO. SEE PG. 2	OVERALL LENGTH "A"		EXPOSED LENGTH "B"	
	IN	CM	IN	CM
E1, E2	13 3/16	33.50	6 1/32	15.34
E3	13 5/16	33.81	6 3/32	15.50
E4	13 1/4	33.66	6 1/16	15.40
E5	12 3/16	30.96	5 17/32	14.07
E6	11 3/4	29.85	5 5/16	13.51
E7, E9	11 11/16	29.69	5 9/32	13.44
E8	11 13/16	30.00	5 11/32	13.59
E10	11 1/2	29.21	5 3/16	13.20
E11 - E13	11 3/8	28.89	5 1/16	12.88
E14	11 1/4	28.58	5	12.72
E15 - E17	11 3/16	28.42	4 31/32	12.64
E18 - E24	11 3/16	28.42	5 1/32	12.80

**Element Assembly Chart
410 B YAGI**

ELEMENT NO. SEE PG. 2	OVERALL LENGTH "A"		EXPOSED LENGTH "B"	
	IN	CM	IN	CM
E1, E5	13 1/4	33.66	6 1/16	15.40
E2, E4	13 5/16	33.81	6 3/32	15.50
E3	13 3/8	33.97	6 1/8	15.57
E6	13 5/16	33.81	6 3/32	15.50
E7	12 1/4	31.11	5 9/16	14.15
E8	11 7/8	30.16	5 1/8	13.67
E9	11 1/8	29.53	5 5/16	13.51
E10	11 11/16	29.69	5 11/32	13.59
E11	11 3/8	28.89	5 3/16	13.20
E12	11 13/16	30.00	5 7/16	13.75

NOTE: Measure to plastic side of element fastener.

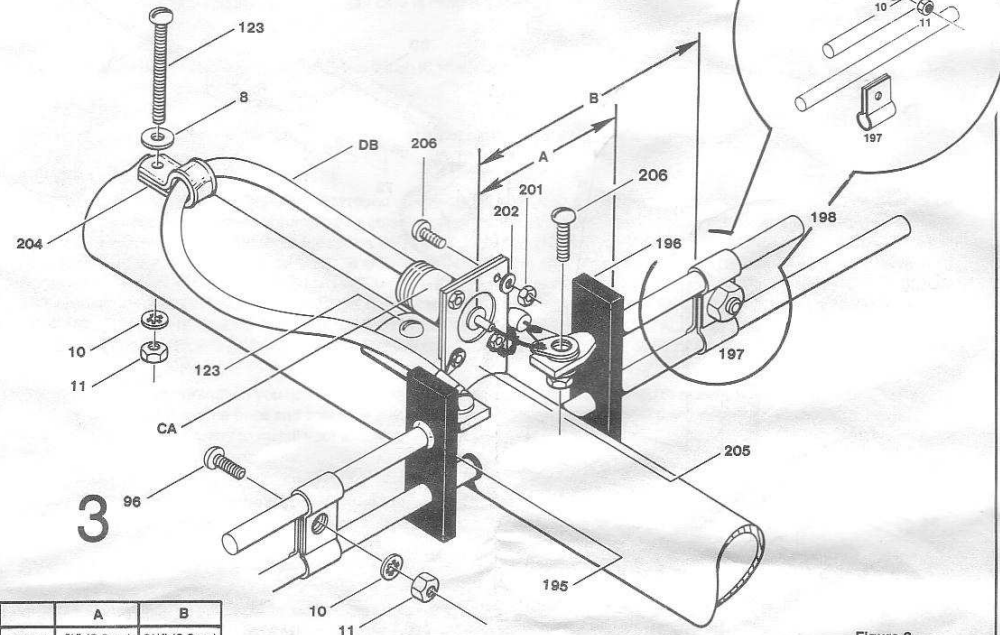
2



Element to Boom Assembly

P/N	DISPLAY	DESCRIPTION	SIZE	QUANTITY	
				424B	410B
194		ELEMENT INSULATOR	3/16" (.48cm)	48	24
195		ELEMENT FASTENER	3/16" (.48cm)	48	24
208		ASSEMBLY TOOL	-	1	1

Dipole Assembly



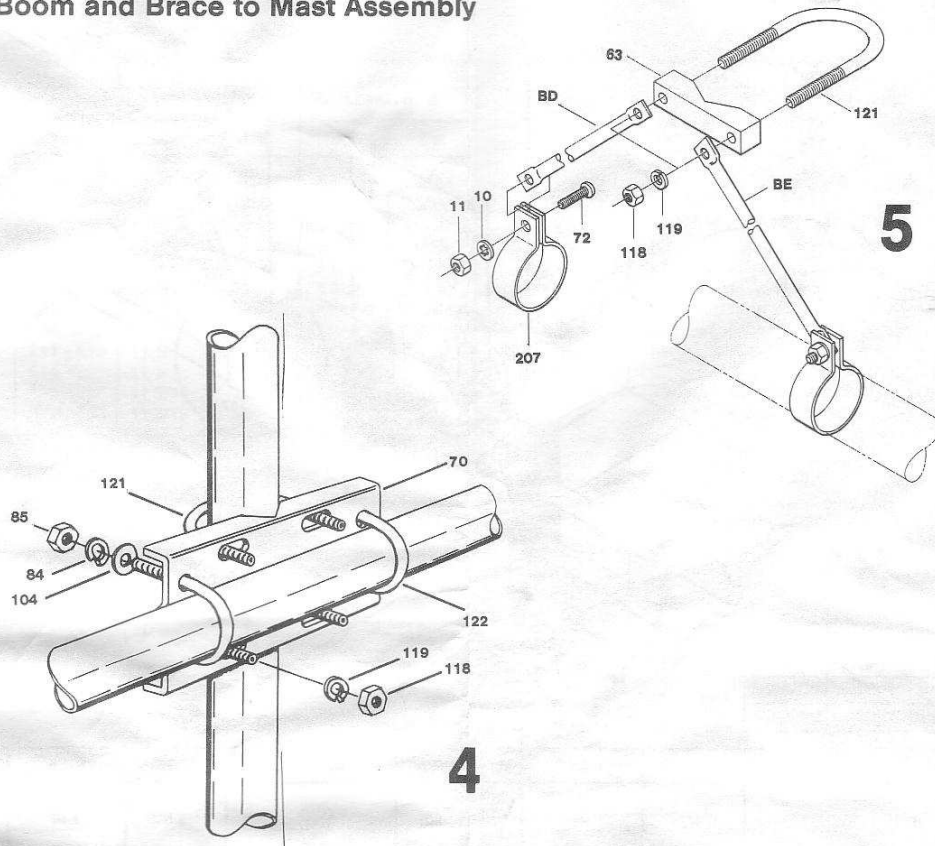
	A	B
424B	3/8" (2.2cm)	3 1/4" (8.3cm)
410 B	3/8" (2.2cm)	2 1/8" (5.4cm)

Figure 3

P/N	DISPLAY	DESC.	SIZE	QTY
DB		BALUN	—	1
CA		CONNECTOR	—	1
197		T-MATCH CLAMP	—	4
198		T-MATCH ROD	—	2
96		MACHINE SCREW	8-32 x 3/8" (.95cm)	2
206		MACHINE SCREW	4-40 x 3/8" (.95cm)	6
123		MACHINE SCREW	8-32 x 1 1/2" (3.81cm)	2
11		HEX NUT	8-32	4

P/N	DISPLAY	DESC.	SIZE	QTY
201		HEX NUT	4-40	6
10		INTERNAL TOOTH LOCK WASHER	#8	4
202		SPLIT LOCK WASHER	#4	6
195		ELEMENT FASTENER	—	2
204		PLASTIC CABLE CLAMP	—	1
196		T-MATCH SPACER	—	2
205		CONNECTOR BRACKET	—	1
8		FLAT WASHER	1/4" (.64cm)	1

Boom and Brace to Mast Assembly



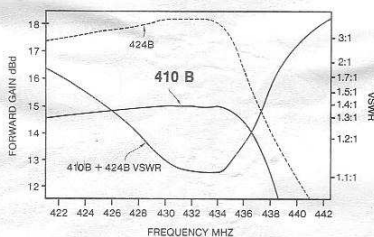
P/N	DISPLAY	DESC.	SIZE	QTY	
				424B	410B
63		V-BLOCK	2½" (6.3cm)	1	0
118		HEX NUT	5/16" (.80cm)	6	4
119		LOCK WASHER	5/16" (.80cm)	6	4
121		U-BOLT	2½ x 3" (5.4 x 7.6cm)	3	2
10		LOCK WASHER	#8	2	0
11		HEX NUT	#8-32	2	0
72		MACHINE SCREW	8-32 x ¾" (1.9cm)	2	0

P/N	DISPLAY	DESC.	SIZE	QTY	
				424B	410B
BE		REAR BRACE	48" (121.92cm)	1	0
BD		FRONT BRACE	72" (182.88cm)	1	0
70		MOUNTING PLATE	4" x 6" (10.16 x 15.24cm)	1	1
122		U-BOLT	1½ x 3" (3.8 x 7.6cm)	2	2
84		LOCK WASHER	¼" (.63cm)	4	4
85		HEX NUT	¼" (.63cm)	4	4
104		FLAT WASHER	¼" (.63cm)	4	4

SPECIFICATIONS

	424 B	410 B
Frequency Range (MHz)	424 - 435	424 - 435
Forward Gain (dBd)	18.2	15.0
Front/Back Ratio (dB)	30	21
E Plane Beamwidth (degrees)	2 x 9.5°	2 x 16.5
H Plane Beamwidth (degrees)	2 x 11°	2 x 14.5
SWR (Typical at Resonance)	1.2:1	1.2:1
Impedance (ohms)	50	50
Input Connector	Type N	Type N
Recommended Stacking Distance:		
E Plane (ft)	5.5	3.66
(m)	2.16	1.12
H Plane (ft)	5.0	4.33
(m)	1.97	1.32
Longest Element (in)	13.3	13.3
(cm)	33.8	33.8
Turning Radius (ft)	10.0	5.66
(m)	3.05	1.73
Weight (lbs)	6.66	4.5
(kg)	3.03	2.05
Length (ft)	17.4	6.0
(m)	5.31	1.82
Windload (ft ²)	2.3	.65
(m ²)	.21	.06

FWD Gain vs Freq MHz
vs VSWR
Chart



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