

**PREASSEMBLED FOUR POLES**

**AFM-4DA, AFM-24DA, AFM-44DA**



TA5FA

## INSTALLATION INSTRUCTIONS

Your Cushcraft Four Pole is designed and 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 brackets will take up to a 2"OD. Mast. For protected installations where severe wind and weather will not be encountered, 1 1/4"OD. steel television type tubing will be satisfactory. At remote exposed locations where wind and ice loading will be encountered, a heavy wall 2"OD. steel or aluminum mast should be used. The AFM-4DA requires 23' of masting, AFM-24DA 15', and the AFM-44DA 8'.

### LOCATIONS

For maximum isolation between pairs of four pole antennas keep the vertical spacing as great as possible. Pairs of four pole antennas may be combined for higher gain requirements.

**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.**

### ASSEMBLY

The Reddi Match and dipoles are factory assembly on the booms. The AFM-4DA, AFM-24DA, and AFM-44DA have 1 dipole for each boom.

Mount the assemblies to the center support or tower using the 2 3/8" x 4 1/4" U-bolts (142) as shown in Figure 1. Keep all Reddi Match rods pointing down on the AFM-4DA and the AFM-24DA. The Reddi Match rods point up on the AFM-44DA. The mast or tower section should extend 5" above the top element.

After tuning and checking the dipoles, prepare to connect the coaxial phasing harness (CPH). Coat the outside threads, of the connectors, on each dipole with silicone grease. **DO NOT GET SILICONE ON THE CENTER PIN OF THE CONNECTOR.** Connect the coaxial phasing harness as illustrated in Figure 2. Tighten until finger tight. Push the black vinyl boot over the connector as far as it will go. Use the remaining silicone around the edges of the vinyl boot. Connect your 50 Ohm feed cable to the center connector, Figure 2. Dress the cables along the booms and down the mast using electrical tape to hold it in position. Recheck and tighten all fasteners and connections.

### THE TIP-TO-TIP VERTICAL SPACING SHOULD BE



Model	Dimension A
AFM-4DA	39 3/8" (100.97cm)
AFM-24DA	26 3/8" (68.42cm)
AFM-44DA	13 3/8" (28.22cm)

### MOUNTING OPTIONS

For a uniform 360 degree pattern with 6 dBd gain, space the dipoles equally around the mast or tower, with each dipole 90 degrees from the dipole above and below it.

For a semi directional pattern with 9 dBd gain, using the AFM-4DA, AFM-24DA or the AFM-44DA, mount the dipoles in one line on one side of the mast. The gain at 100 degrees either side of the center will be 5 dBd. Gain directly in back of the antenna will be 1.5 dBd.

For an elliptical pattern with 7.8 dBd gain, using two of the AFM-4DA, AFM-24DA or the AFM-44DA mount the dipoles in one line on each side of the mast. The gain directly out from the dipoles will be 5 dBd with the 7.8 dBd gain being 90 degrees to either side.

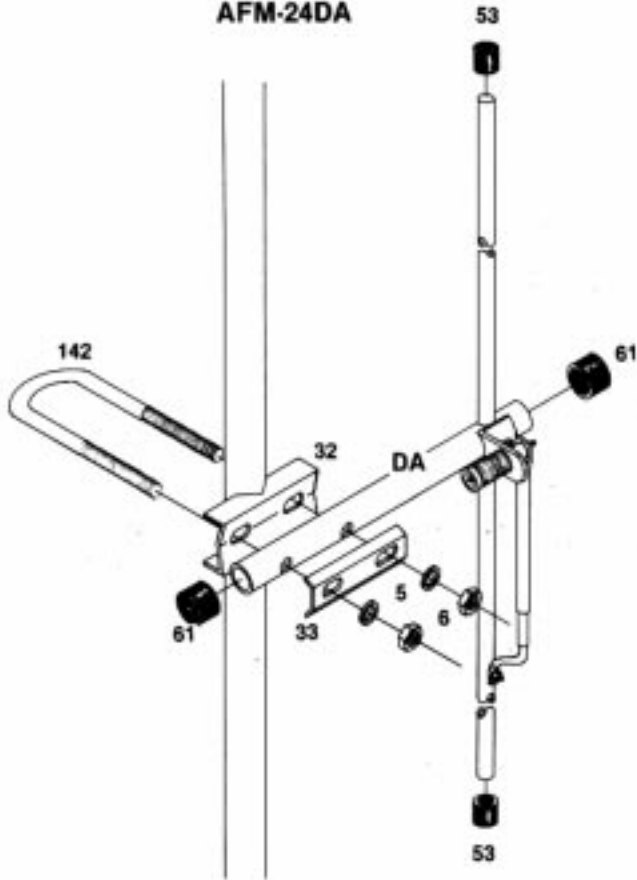
### TUNING

The Reddi Match units are preset. In most installations no tuning will be required. If you do find it necessary to tune, follow the procedure outlined below for each dipole. The AFM-4DA and AFM-24DA have fixed Reddi Matches and are not tunable.

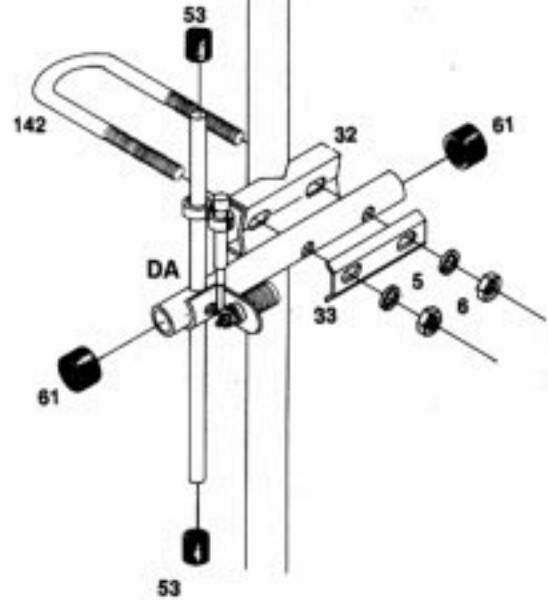
1. Insert a good quality standing wave bridge in the 50 ohm cable between signal source and the dipole.
2. Adjust the bridge for maximum forward power. Check the standing wave ratio with the bridge in the reverse position. If the VSWR is high, loosen the tuning strap and adjust it slightly in either direction. Move away from the antenna and check the reading. If the VSWR has increased, move the strap back to its original position and adjust in the opposite direction. If the VSWR dropped, repeat the adjustment procedure until there is little or no reflected power indicated on the bridge.






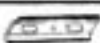



# FIGURE 1

AFM-4DA  
&  
AFM-24DA



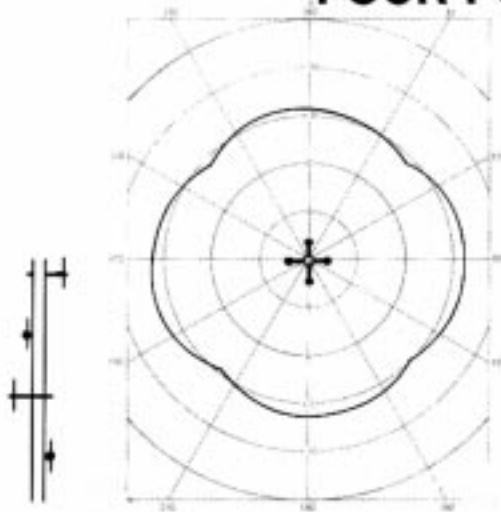
AFM-44DA



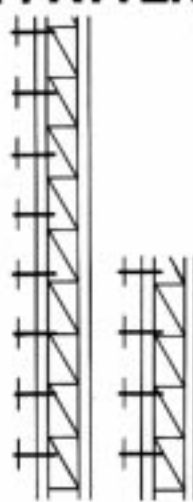
P/N	KEY	DISPLAY	DESCRIPTION	SIZE	QUANTITY
	DA		Dipole Assembly		4
020005	5		Lock Washer	5/16" (0.8cm)	8
020006	6		Hex Nut	5/16" (0.8cm)	8
020142	142		U-Bolt	2 3/8" (5.1cm)	4
190032	32		U-Bolt Bracket	3 1/2" (8.9cm)	4
190033	33		U-Bolt Bracket Plate	3 1/2" (8.9cm)	4
050053	53		Plastic Cap	1/2" (1.3cm)	8
050061	61		Plastic Cap	7/8" (2.2cm)	8
290326	326		Danger Label		1

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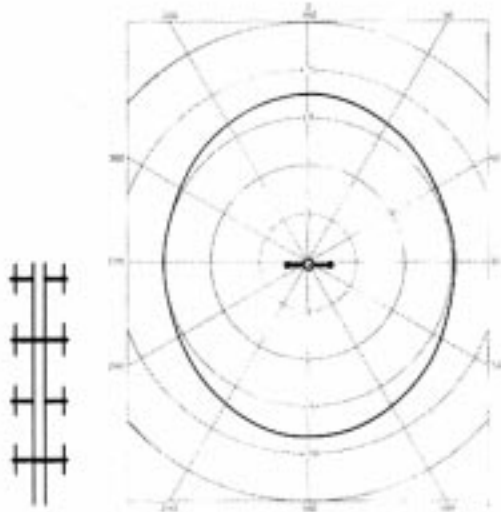
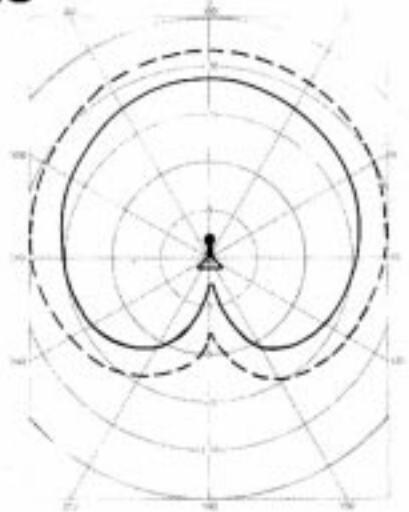
# FOUR POLE PATTERNS



— 4 DIPOLE OMNI



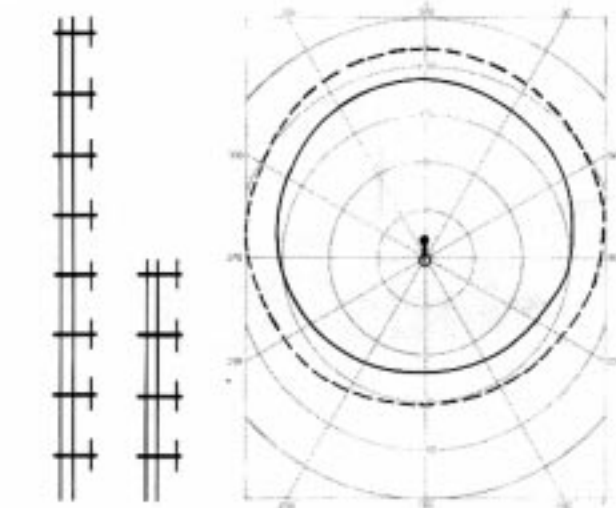
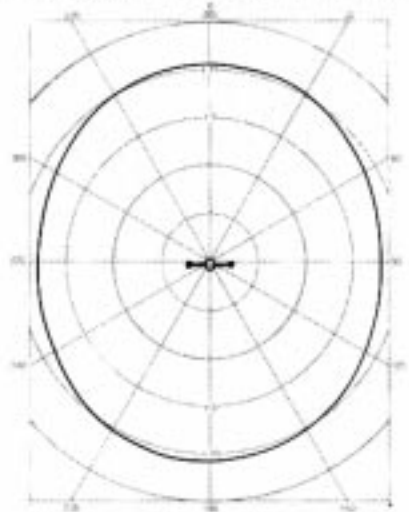
— 4 DIPOLES MOUNTED ON 12" TOWER OFFSET 9dBd  
 --- 8 DIPOLES MOUNTED ON 12" TOWER OFFSET 12dBd



— 2 - FOUR POLES ELLIPTICAL



— 4 - FOUR POLES ELLIPTICAL

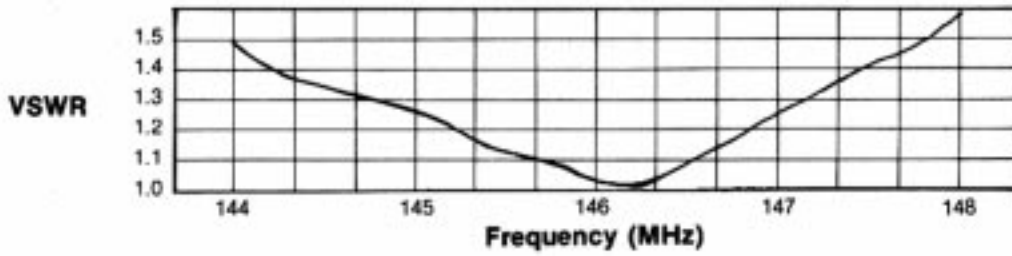


— FOUR POLE OFFSET TOP MOUNTED ON MAST  
 --- 2-FOUR POLES OFFSET TOP MOUNTED ON MAST

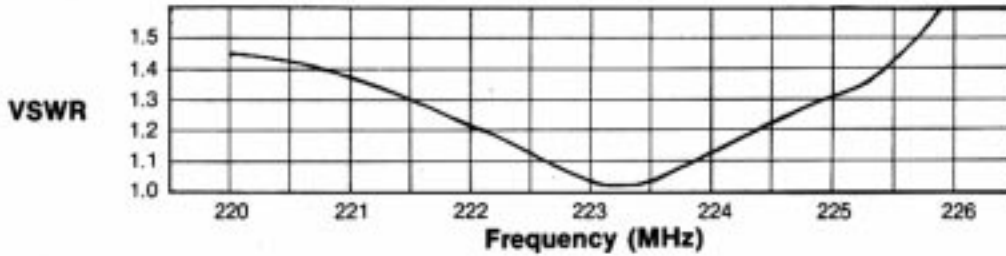
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# VSWR

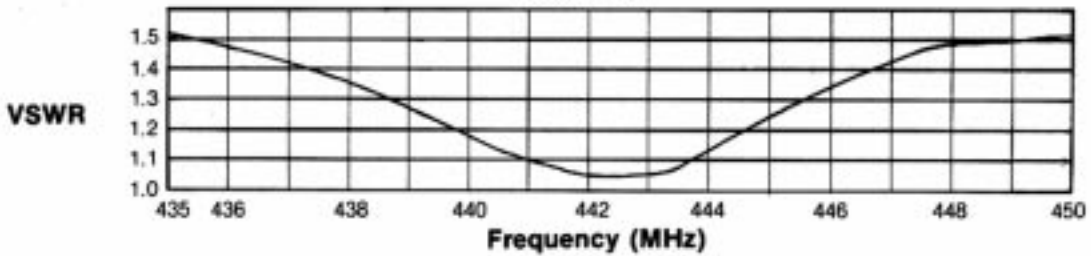
AFM-4DA



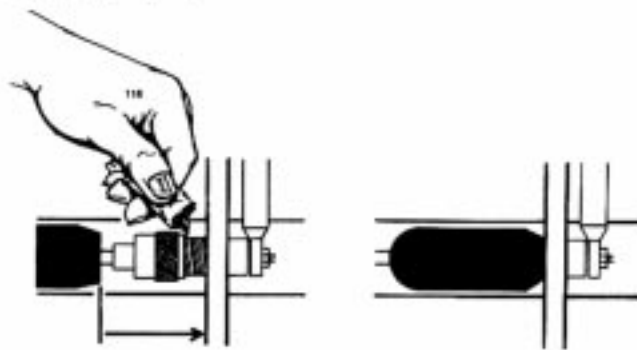
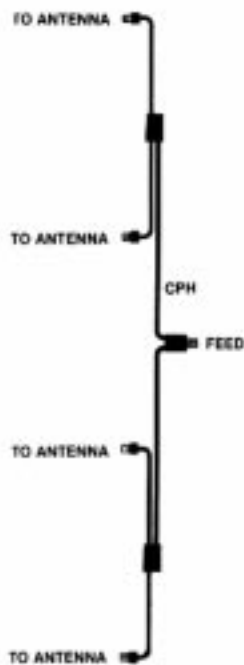
AFM-24DA





AFM-44DA



## FIGURE 2



P/N	KEY	DISPLAY	DESCRIPTION	SIZE	QUANTITY
	CPH		Coaxial Phasing Harness		1
240116	116		Silicone Grease		

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## SPECIFICATIONS

	<b>AFM-4DA</b>	<b>AFM-24DA</b>	<b>AFM-44DA</b>
FREQUENCY RANGE	144-148 MHz	220-225 MHz	435-450 MHz
HEIGHT	23ft. (7.0m)	15ft. (4.5m)	8ft. (2.4m)
WEIGHT	7lbs. (3.2kg)	7lbs. (3.2kg.)	5lbs. (2.27kg.)
2:1 VSWR BANDWIDTH	> 10	> 15	> 20
WINDSURFACE AREA	2.58ft <sup>2</sup> (0.24m <sup>2</sup> )	1.85ft <sup>2</sup> (0.17m <sup>2</sup> )	1.13ft <sup>2</sup> (0.11m <sup>2</sup> )
GAIN(OMNI)	6dB	6dB	6dB
(OFFSET)	9dB	9dB	9dB
IMPEDANCE	50Ω	50Ω	50Ω
POWER HANDLING	500watts(cont.)	500watts(cont.)	500watts(cont.)
WIND SURVIVAL	100mph(160km/h)	100mph(160km/h)	100mph(160km/h)
LIGHTNING PROTECTION	dc Ground	dc Ground	dc Ground
TERMINATION	SO-239	SO-239	SO-239

## LIMITED WARRANTY

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