

# ASSEMBLY AND INSTALLATION INSTRUCTIONS

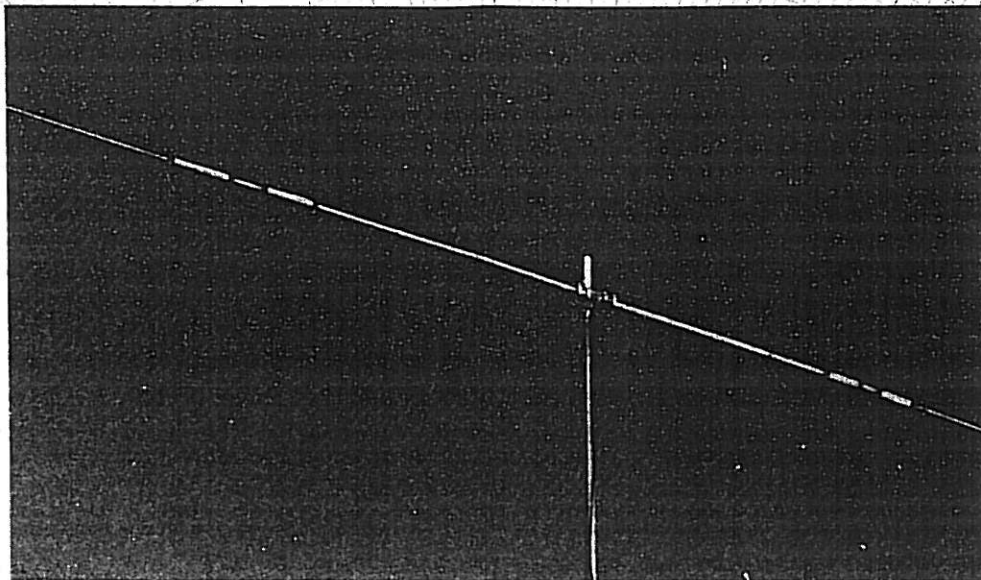


PHOTO OF TYPICAL WORLD RANGER DIPOLE

## WORLD RANGER ROTATABLE DIPOLE D40 40 METERS

### LIMITED WARRANTY

CUSHCRAFT CORPORATION, P.O. BOX 4680, MANCHESTER, NEW HAMPSHIRE 03103, WARRANTS TO THE ORIGINAL CONSUMER PURCHASER FOR ONE YEAR FROM DATE OF PURCHASE THAT EACH CUSHCRAFT ANTENNA IS FREE OF DEFECTS IN MATERIAL OR WORKMANSHIP. IF, IN THE JUDGEMENT OF CUSHCRAFT, ANY SUCH ANTENNA IS DEFECTIVE, THEN CUSHCRAFT CORPORATION WILL, AT ITS OPTION, REPAIR OR REPLACE THE ANTENNA AT ITS EXPENSE WITHIN THIRTY DAYS OF THE DATE THE ANTENNA IS RETURNED (AT PURCHASER'S 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 CORPORATION SHALL NOT BE LIABLE FOR ANY INCIDENTAL OR CONSEQUENTIAL DAMAGES WHICH 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 WHICH VARY FROM STATE TO STATE. THIS WARRANTY DOES NOT EXTEND TO ANY PRODUCTS WHICH HAVE BEEN SUBJECT TO MISUSE, NEGLIGENCE, ACCIDENT OR IMPROPER INSTALLATION. ANY REPAIRS OR ALTERATIONS OUTSIDE OF THE CUSHCRAFT FACTORY WILL NULLIFY THIS WARRANTY.

*Specifications subject to change without notice.*



48 Perimeter Road, P.O. Box 4680  
Manchester, NH 03108 USA  
TELEPHONE 603-627-7877  
TELEX 953-050 CUSHSIG MAN

Your Cushcraft Rotatable Dipole 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 care is used in assembly and installation. When checking the tubing received with your antenna package using the parts list, it is easiest to identify the various dimensions of tubing by separating them into groups of the same diameter and length.

## MASTING

The mast mount bracket will accommodate up to a 2 1/8 in. OD (5.34 cm) mast.

## ROTATOR

A good antenna rotator will provide the best service and longest life.

## 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: THE 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 involved 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 antennas may be mounted on the same mast. Short VHF/UHF Beams should be mounted at least 5 feet from your Rotatable Dipole. Beams with similar boom lengths should be mounted one half the boom length from each other, if practical.

Vertical antennas such as the Ringo may be placed a few feet above your Rotatable Dipole. If metal guy wires are used, they should be broken with strain insulators.

## 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. You should also use a coaxial lightning arrester like the Blitz Bug in your feedline.

## ELEMENT ASSEMBLY

Lay out the element pieces for your rotatable dipole. Insert the 5" (12.7 cm) fiberglass insulator into the drilled end of EA (fig. 1). Secure it there using machine screws (123), lockwashers (10), and nuts (11). Tighten these securely. Now assemble the mount assembly over the fiberglass insulator and sleeve using figure 2. Prepare your feedline as shown. The coaxial balun consists of approximately 12 turns of your feedline in a coil approximately 6 inches (15 cm) in diameter.

Assemble the rest of the element using figure 3. Each piece of tubing should be inserted into the next larger piece and secured with a clamp. The capacitive X-hat is shown in the exploded drawing. Use the dimensions shown to set the element lengths.

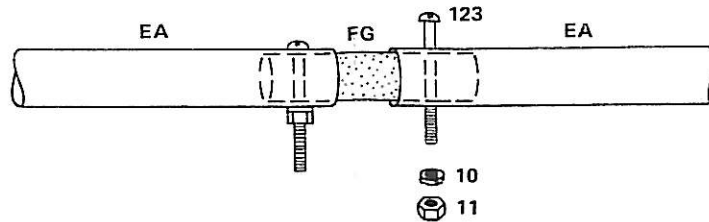
## FINAL CHECK

Now recheck your antenna dimensions. Your antenna is now ready for installation on your support. Note: checking the VSWR near the ground will provide erroneous results. The antenna must be in a working position for a good VSWR test.

## WORLD RANGER DIPOLE SPECIFICATIONS

	D40	D4	D3	DW3
BAND, METERS	40	10, 15, 20, 40	10, 15, 20	12, 16, 30
BANDWIDTH AT 2:1 SWR, KHz	200	350 + 125 KHz on 40 m	500 +	Entire Band
SWR AT RESONANCE	1.5 to 1	1.5 to 1	1.5 to 1	1.5 to 1
POWER RATING; WATTS PEP	2000	2000	2000	2000
LENGTH, Ft. (M)	42.25 (12.88)	35.8 (10.92)	25.8 (7.86)	34.0 (10.37)
MAST DIAMETER MAX In. (cm)	2 (5)	2 (5)	2 (5)	2 (5)
WIND LOAD, Ft. (m <sup>2</sup> )	1.3 (.12)	1.3 (.12)	.9 (.08)	.9 (.08)
WEIGHT, Lb. Kg.	12 (5)	13 (6)	9 (4)	11 (5)

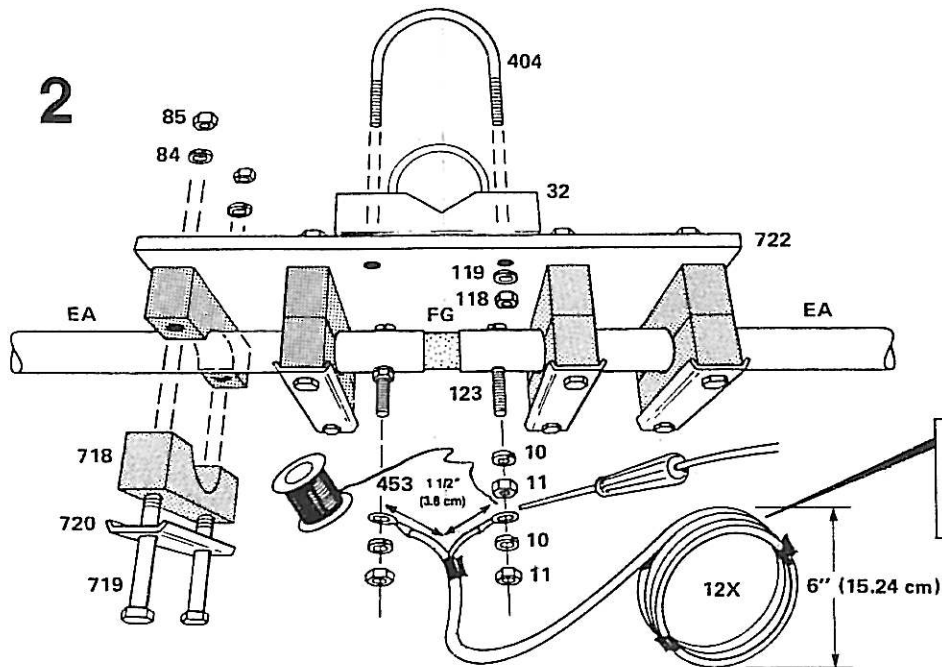
1



**D40 40 METERS**

STOCK NO.	KEY	DESCRIPTION	SIZE	QUANTITY
010123	123	Machine Screw	8-32 x 1 1/2" (3.8 cm)	2
010010	10	Lockwasher	#8	2
010011	11	Nut	8-32	2
—	FG	Insulator	5" (12.7 cm)	1
—	EA	Aluminum Tubing	1 1/4 x 72" (3.2 x 182.9 cm)	2

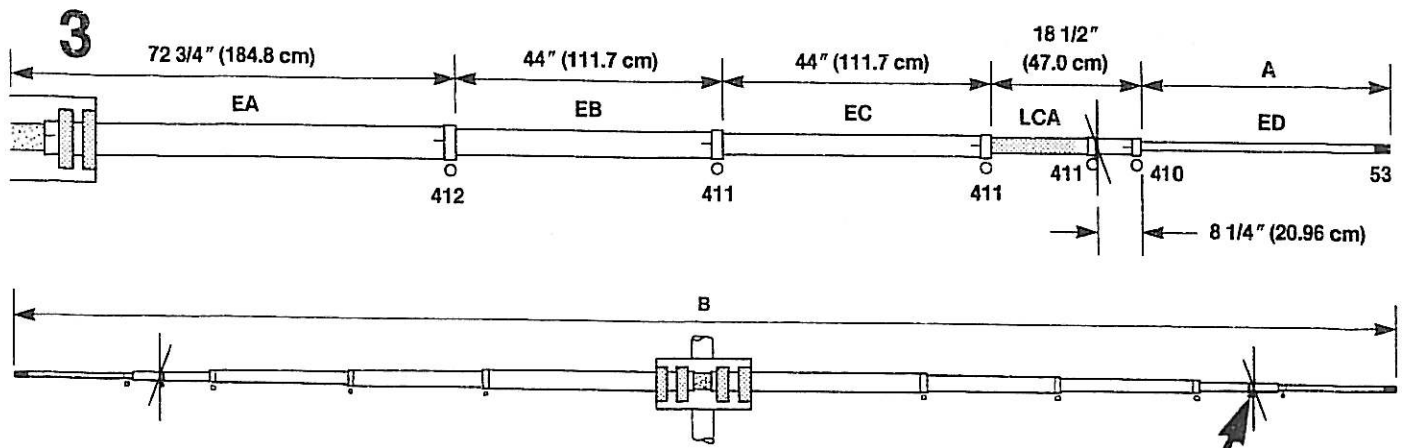
2



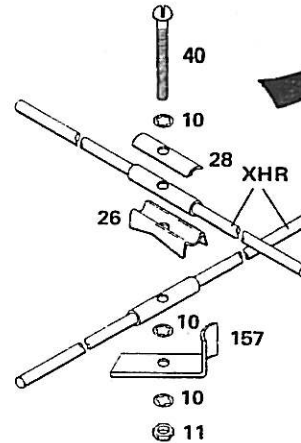
**WARNING!**  
DO NOT USE  
FOAM DIELECTRIC  
COAXIAL CABLE

**MOUNT CLAMP ASSEMBLY**

STOCK NO.	KEY	DESCRIPTION	SIZE	QUANTITY
010719	719	Machine Screw	1/4-20 x 3" (7.6 cm)	8
010084	84	Lock Washer	1/4" (.64 cm)	8
010085	85	Nut	1/4-20	8
010010	10	Lock Washer	#8	2
010011	11	Nut	8-32	2
190722	722	Mount Plate	4 x 10" (10.2 x 25.4 cm)	1
190720	720	Backing Plate	1 1/4 x 3 1/2" (3.2 x 8.9 cm)	4
190032	32	U-Bolt Bracket	3 1/2" (8.9 cm)	2
010404	404	U-Bolt	2 1/8 x 3" (5.4 x 7.6 cm)	2
010118	118	Nut	5/16" (.8 cm)	4
010119	119	Lock Washer	5/16" (.8 cm)	4
100453	453	Terminal	12-10 AWG	2
170718	718	Insulator Block	2 1/2 x 3/4" (6.4 x 1.9 cm)	8



	A	B
CW 7030 KHZ	76" 193 cm	42' 7" 12.98 m
CW 7080 KHZ	74" 188 cm	42' 3" 12.88 m
MID 7130 KHZ	72" 183 cm	41' 11" 12.78 m
PHONE 7230 KHZ	68" 173 cm	41' 3" 12.57 m



## D40 ELEMENT

STOCK NO.	KEY	DESCRIPTION	SIZE	QUANTITY
050077	53	Black Plastic Cap	1/2" (1.3 cm)	2
030410	410	Worm Clamp	1" (2.5 cm)	2
030411	411	Worm Clamp	1 1/8" (2.9 cm)	6
030412	12	Worm Clamp	1 1/2" (3.8 cm)	2
290326	326	Warning Label	—	1
—	EB	Aluminum Tubing	1 1/8 × 48" (2.9 × 121.9 cm)	2
—	EC	Aluminum Tubing	1 × 48" (2.5 × 121.9 cm)	2
—	ED	Aluminum Tubing	1/2 × 78" (1.3 × 198.1 cm)	2
010010	10	Lock Washer	#8	6
010011	11	Nut	8-32	2
010040	40	Machine Screw	8-32 × 1 1/4" (3.2 cm)	2
190028	28	Aluminum Half Washer	—	2
—	XHR	Aluminum Rod	3/16 × 34 1/2" (5 × 87.6 cm)	4
190157	157	Formed Aluminum Bracket	2 × 3/4" (5.1 × 1.9 cm)	2
190026	26	Bracket	7/8" (2.2 cm)	2