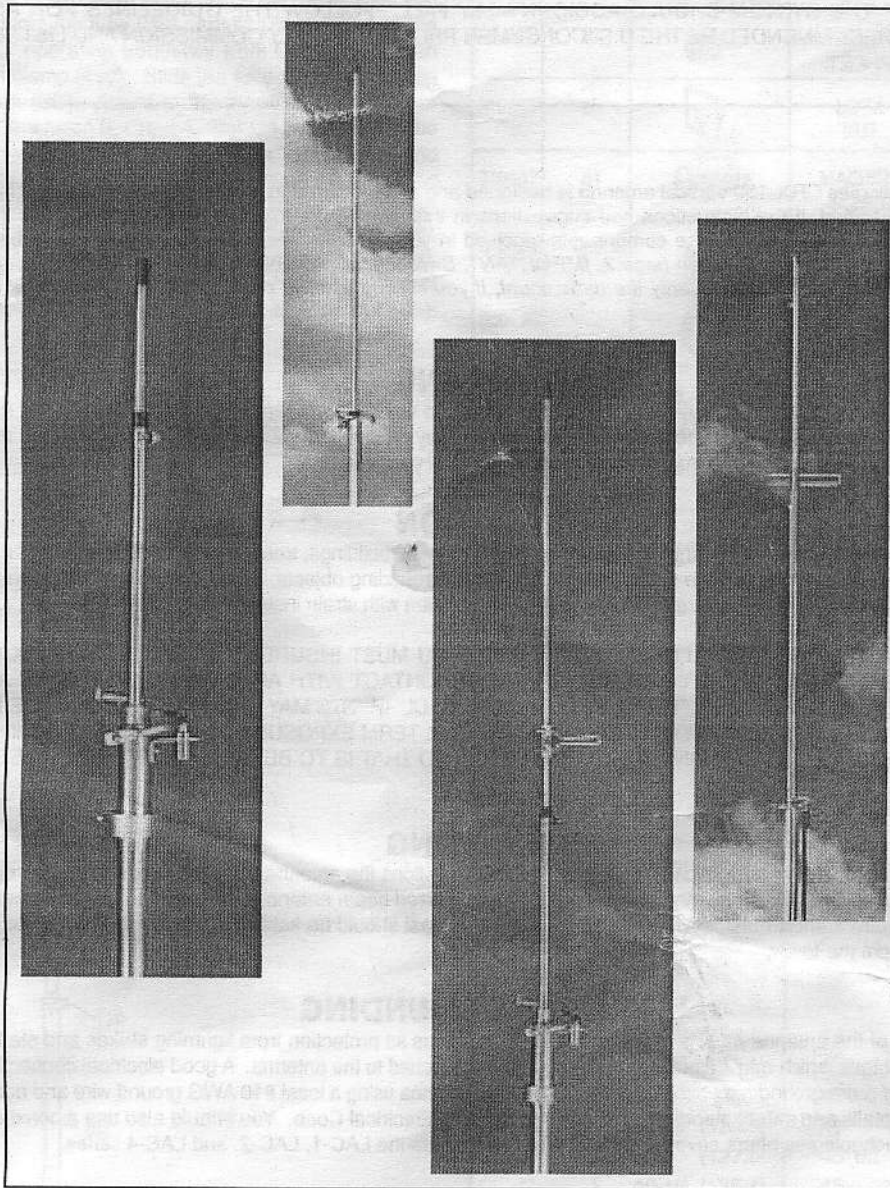


Assembly and Installation Instructions



CRX-150 Ringo Ranger / 150-174 MHz



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for a Connected World

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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.

Your Laird Technologies CRX-150 vertical antenna is designed and manufactured to give trouble free service. This antenna will perform as specified, if the instructions and suggestions in this manual are followed and care is used in the assembly and installation. When checking the components received in your antenna package use the parts listed beside each diagram. There is a master parts list on page 2. *IMPORTANT: Save the weight label from the outside of the carton. Each antenna is weighed at the factory to verify the parts count. If you claim a missing part you will be asked for at the weight verification label.*

PLANNING

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 in charge and that they must follow your instructions. If you have any doubts at all, employ a professional antenna installation company to install your antenna.

LOCATION

Location of the antenna is very important. Surrounding objects such as buildings, trees, powerlines, towers, 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.

EXTREME CARE MUST BE USED FOR YOUR SAFETY. YOU MUST INSURE THAT WHILE THE CRX-150 IS IN OPERATION NEITHER PEOPLE OR PETS CAN COME IN CONTACT WITH ANY PORTION OF YOUR ANTENNA INCLUDING THE GROUND RADIALS. DEADLY VOLTAGES AND CURRENTS MAY EXIST. ALSO, SINCE THE EFFECTS OF EXPOSURE TO RF ARE NOT FULLY UNDERSTOOD, LONG TERM EXPOSURE TO INTENSE RF FIELDS IS NOT RECOMMENDED. THERE IS A WARNING STICKER PROVIDED THAT IS TO BE ATTACHED TO THE BASE OF THE CRX-150.

MOUNTING

The CRX-150 will take a 1-1/4" (3.17 cm) OD mast. For all installations the antenna must be mounted on the top 6 inches (15 cm) of a mast. It should be mounted above horizontally polarized beam antennas. If you side mount this antenna on a tower it will require a short mast, secured at two points. The mast should be kept at least 1/2 wavelength or 40 inches (100 cm) away from the tower.

SYSTEM GROUNDING

Direct grounding of the antenna mast is very important. This serves as protection from lightning strikes and static buildup, and from high voltages which may be present in the equipment attached to the antenna. A good electrical connection should be made to one or more ground rods directly at the base of the antenna using a least #10 AWG ground wire and noncorrosive hardware. For details and safety standards, consult the National Electrical Code. You should also use a coaxial lightning arrestor. Laird Technologies offers several different models, such as the LAC-1, LAC-2, and LAC-4 series.

TUNING

Use a good quality 52 ohm coaxial cable with a PL-259 connector. When tuning, mount the antenna as high and in the clear as possible. Use a good quality standing wave ratio bridge. It is preferable to mount the bridge at the antenna for tuning. Set the transmitter to your center operating frequency. Adjust the transmitter and bridge for maximum forward power. Check the standing wave ratio- reflected power with the bridge in the reverse position. Move away from the antenna when making measurements.

If the VSWR is high, loosen the phasing stub (BE) and slide the rod slightly in either direction. If the VSWR increased, move the rod 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. Tighten the tuning rod clamp securely.

For best performance mount the antenna as high and in the clear as possible

#1 - ASSEMBLY

Slide the tube (BB) into the end of the base and ring assembly (BA). Tighten securely with a worm clamp (410). Slide the phasing section (BC), non-slotted end into the tube (BB). Adjust Dimension A to the proper length for your operating frequency from Chart 1. Tighten securely with a worm clamp (410). Slide the tube (BD) into the top of the phasing section (BC). Adjust to the proper length for your operating frequency Dimension B, Chart 1. Tighten securely with the worm clamp (409). Press the plastic cap (27) over the exposed end of the tube (BD). Slide the phasing stub (PS) through the predrilled holes in the fiberglass insulator. Adjust to Dimension C for your operating frequency from Chart 1. Tighten the set screws securely. They may fit tight as they self thread through the aluminum tubing. Attach mast locking screw (81) by inserting into hole at bottom of base assembly (Figure B) and threading into special nut (65).

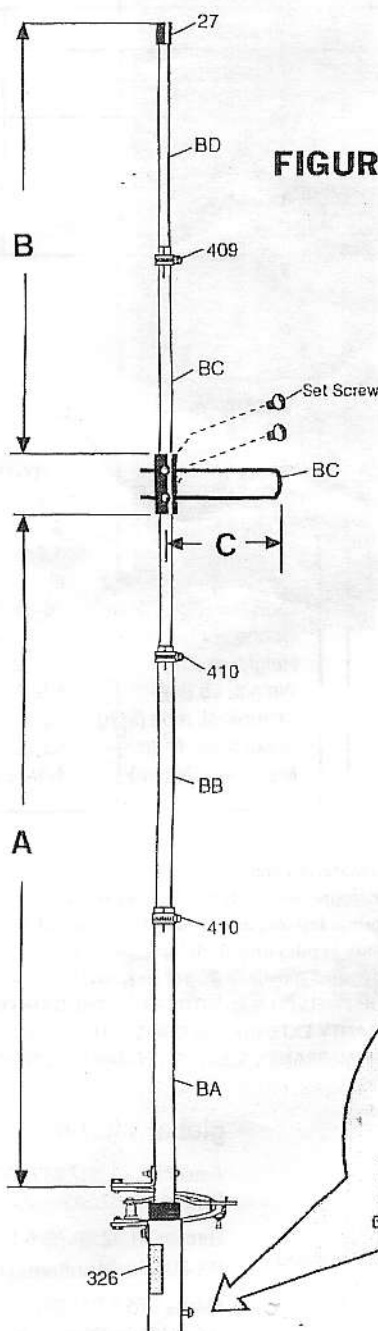


FIGURE A

FIGURE B

050027	27		PLASTIC CAP	5/8" (1.6 cm)	1
012965	65		LOCK NUT	1/4" (.6 cm)	1
010081	81		MACHINE SCREW	1/4" - 20 x 3/4"	1
030409	409		WORM CLAMP	7/8" (2.2 cm)	1
030410	410		WORM CLAMP	1" (2.5 cm)	2
	BA		BASE ASSEMBLY		1
	BB		ALUMINUM TUBE	7/8" x 24" (2.2 x 61.0 cm)	1
	BC		ALUMINUM TUBE	3/4" x 35" (1.9 x 88.9 cm)	1
	BD		ALUMINUM TUBE	5/8" x 36" (1.6 x 91.4 cm)	1
	BE		PHASING STUB	9-3/4" (24.8 cm)	1

CHART 1

Frequency (MHz)	Dimension A		Dimension B		Dimension C	
	Inches	(cm)	Inches	(cm)	Inches	(cm)
146	55	(139.7)	50-1/4	(127.6)	9	(22.9)
148	54-1/4	(137.8)	49-1/2	(125.7)	8-7/8	(22.5)
150	53-1/2	(135.9)	48-3/4	(123.8)	8-3/4	(22.2)
152	52-3/4	(134.0)	48	(121.9)	8-5/8	(21.9)
154	52	(132.1)	47-1/4	(120.0)	8-5/8	(21.9)
156	51-1/4	(130.2)	46-1/2	(118.1)	8-1/2	(21.6)
158	50-1/2	(128.3)	46	(116.8)	8-3/8	(21.3)
160	50	(127.0)	45-1/2	(115.6)	8-1/4	(20.9)
162	49-1/4	(125.1)	45	(114.3)	8-1/4	(20.9)
164	48-3/4	(123.8)	44-1/2	(113.0)	8-1/8	(20.6)
166	48	(121.9)	44	(111.8)	8	(20.3)
168	47-1/2	(120.7)	43-1/2	(110.5)	7-7/8	(20.0)
170	47	(119.4)	43	(109.2)	7-7/8	(20.0)
172	46-1/2	(118.1)	42	(106.7)	7-3/4	(19.7)
174	46	(116.8)	41-1/2	(105.4)	7-5/8	(19.4)

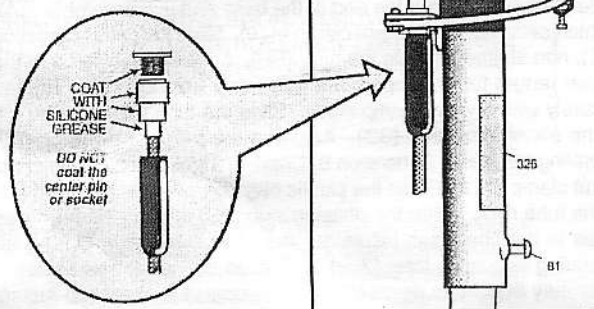
#2 - MOUNT ON MAST



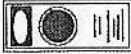
The CRX-150 can be mounted on a mast with an outside diameter of 1-1/4" (3.17 cm). Slide the antenna over the mast as far as it will go and secure by tightening locking screw (Figure B). Affix danger label (326).

#3 - FEEDLINE

The CRX-150 is designed for use with 50 Ohm coaxial cable terminated with a PL-259 connector. Any length of cable can be used with your CRX-150. The shortest length of cable will have the least loss. A connector boot is included for use with your new antenna (Figure B). Slide the boot over the cable before attaching your PL-259. Coat only the outside connector threads and shell with silicone grease. Do not coat the center pin or receptacle. After the PL-259 is firmly screwed onto the antenna connector, slide the vinyl boot over the connector and against the connector bracket for a good weather-tight connection. After the antenna is on the mast, tape the feedline to the mast. If you plan to install the antenna in a salty or corrosive environment, you may want to consider coating it with a clear marine varnish or equivalent after it is assembled. For final tuning see page 1.

FIGURE C



KEY	PART#		DESCRIPTION	SIZE	QTY
050115	115		CONNECTOR BOOT		1
240116	116		SILICONE GREASE PACKAGE		1
290326	326		DANGER LABEL		1

MASTER PARTS LIST

KEY	PART#	DESCRIPTION	QTY
BA		Base assembly with pre-assembled ring	1
BB		7/8" x 24" (2.2 x 61.0 cm) - Aluminum tube	1
BC		3/4" x 35" (1.9 x 88.9 cm) - Alum. tube w/ insulator	1
BD		5/8" x 36" (1.6 x 91.4 cm) - Aluminum tube	1
BE		9-3/4" (24.8 cm) - Aluminum phasing stub	1
27	050027	5/8" Plastic cap	1
65	012965	1/4"-20 (.6 cm) - Steel locknut	1
81	010081	1/4- 20 x 3/4" (1.9 cm) - Machine screw	1
115	050115	Connector boot	1
116	240116	Silicone grease packet	1
326	290326	Danger label	1
410	030410	1" (2.5 cm) Worm clamp	2
409	030409	7/8" (2.2 cm) Worm clamp	1

SPECIFICATIONS

Model	CRX-150
Frequency, MHz	150-174
Gain, dBi	5
VSWR (Nominal)	1.5:1
Bandwidth 1.5:1 MHz	6
-3dB bwwidth, E-Plane ⁹⁹	36
Connector (Female)	UHF
Height, in (cm)	116 (294)
Weight, Lb (kg)	5 (2.2)
W/survival, mph (kph)	80 (125)
W/sur Area, ft ² (m ²)	0.5 (0.05)
Max. Mast, in (cm)	1-1/4 (3.17)

Laird Technologies warrants to the original purchaser that antenna products will remain free from defects in materials and workmanship for a period of twelve (12) months from the purchase date. If any such defect is discovered within the warranty period, Laird Technologies will at its sole option, repair or replace the Product free of charge upon its return to the factory. This warranty applies only if the Product is used in a normal fashion, and is void if the Product is abused, disassembled, tampered with, used unreasonably, or fails as a result of normal wear. Furthermore, this warranty applies only to defects, which occur where the proper Product is selected as recommended by Laird Technologies and is used in the fashion recommended by Laird Technologies for the defective Product. THIS WARRANTY IS IN LIEU OF ALL OTHER WARRANTIES, EXPRESSED OR IMPLIED, AND IS LIMITED TO A PERIOD OF TWELVE(12) MONTHS FROM THE DATE OF ORIGINAL PURCHASE. LAIRD IS NOT LIABLE FOR INCIDENTAL OR CONSEQUENTIAL DAMAGES OF ANY KIND. ANY WARRANTY EXTENDED HEREIN SHALL BE LIMITED TO THE PRICE PAID TO LAIRD FOR THE DEFECTIVE PRODUCT. WHERE STATE OR LOCAL LAW GOVERNS THE PERIOD OF WARRANTY, SUCH PERIOD SHALL CONTROL.

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