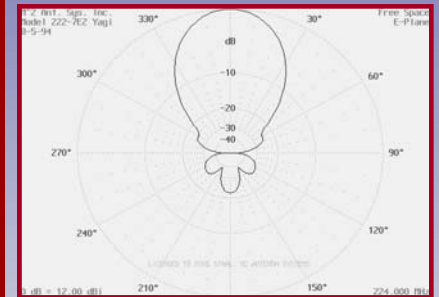
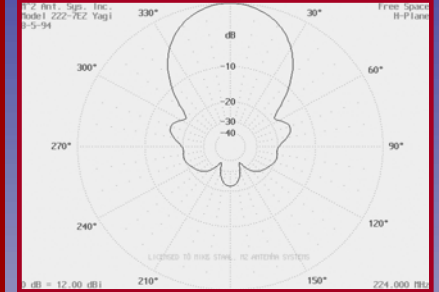
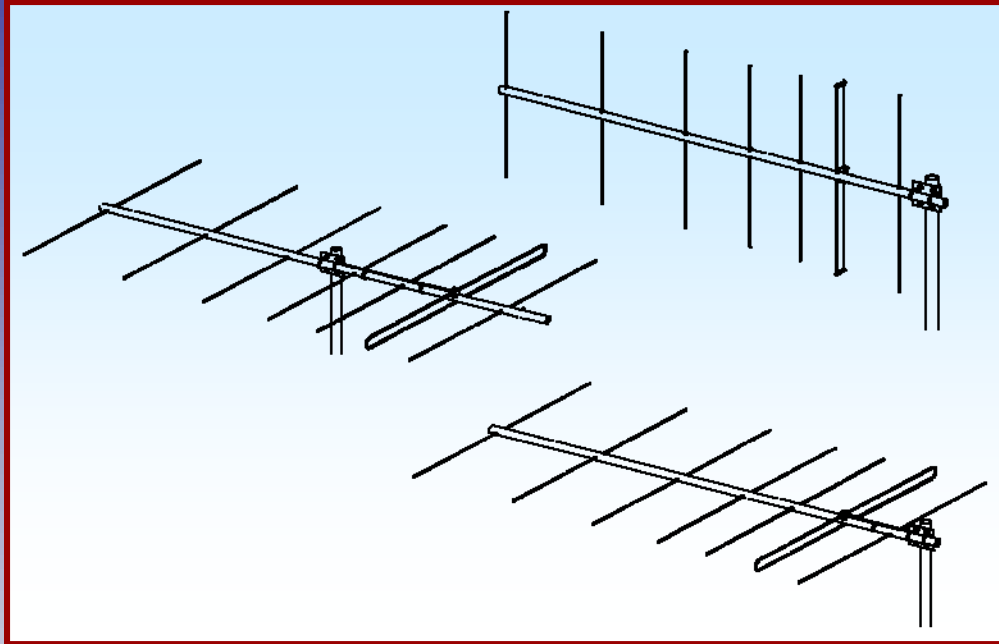




# M2 Antenna Systems, Inc.

## Model No: 222-7EZ



### SPECIFICATIONS:

Model .....	222-7EZ	Power Handling .....	1.5 kW
Frequency Range .....	220 To 226 MHz	Boom Length / Dia .....	68" / 1"
*Gain .....	11.9 dBi	Maximum Element Length .....	26-3/8"
Front to back .....	22 dB Typical	Turning Radius: .....	36"
Beamwidth .....	E=46° H=52°	Stacking Distance .....	58" High & 65" Wide
Feed type .....	"T" Match	Mast Size .....	1-1/2" to 2" Nom.
Feed Impedance .....	50 Ohms Unbalanced	Wind area / Survival .....	0.5 Sq. Ft. / 100MPH
Maximum VSWR .....	1.2:1	Weight / Ship Wt .....	3 Lbs. / 4 Lbs.
Input Connector .....	"N" Female		

**\*Subtract 2.14 from dBi for dBd**

### FEATURES:

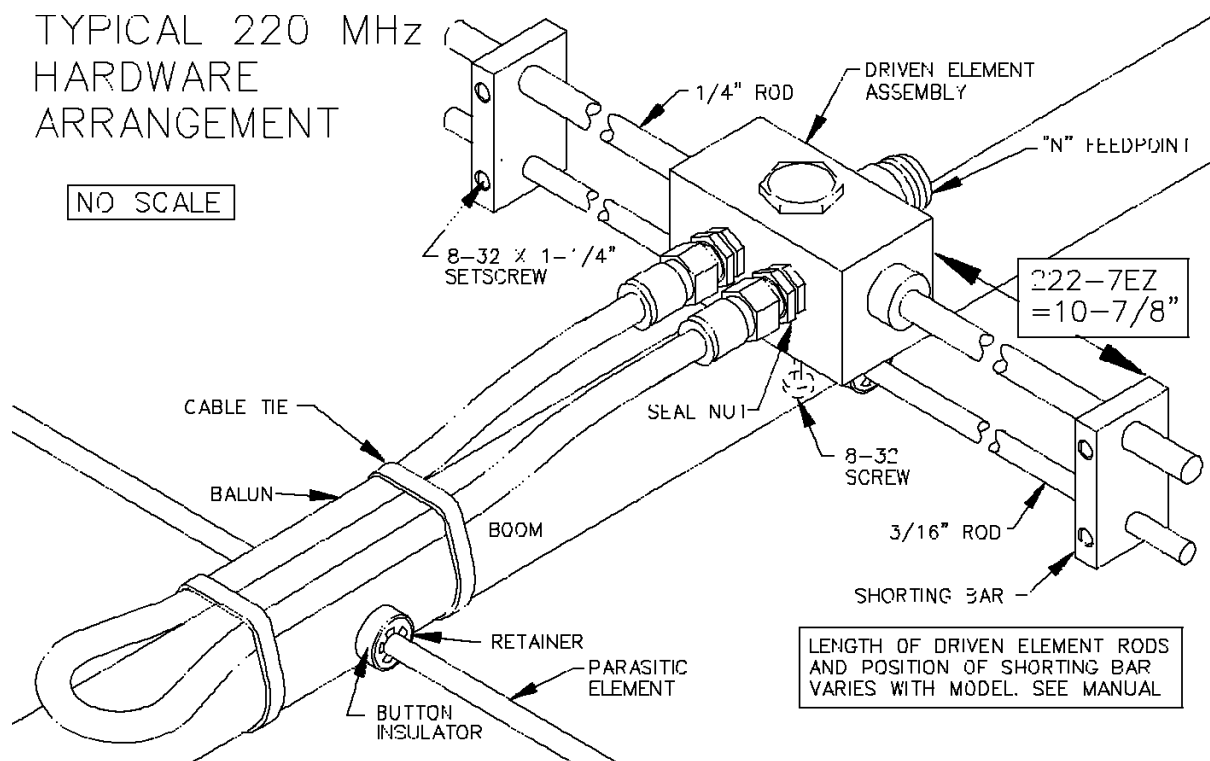
The 222-7EZ features a clean mechanical design, full band coverage and computer optimized performance. Rear or center mountable, it is perfect for base and portable use with FM, Packet or SSB. Every station needs one! The heart of the 222-7EZ is a unique Driven Element Module with superior weather resistance and power handling abilities. All connectors are O-ring sealed to the CNC machined block and internal connections are sealed in a space-age silicone gel with a dielectric strength nearly 4 times greater than air. The Balun coax connectors are triple O-ring sealed. Other key mechanical and electrical parts are CNC machined from 6061-T6 aluminum and all hardware except U-bolts is stainless steel.

# 222-7EZ ASSEMBLY MANUAL

Tools required: screwdriver, 11/32", 7/16", and 1/2" end wrenches and / or sockets, measuring tape.

1. Assemble the two 1" boom sections using 8-32 x 1-1/4" screws and locknuts.
2. Lay out the 3/16" elements by length and position as shown the DIMENSION sheet. Start with the REFLECTOR element. Balance across finger to find center and push on a black button insulator to about 1/2" from center. Push the element through the holes 1/2" from the rear of the boom and install the second button, snugging it up into boom. **DO NOT BOTHER WITH ACCURATELY CENTERING** the element at this time and **DO NOT INSTALL** the shaft retainers yet. This is easier to do after all the elements are installed in the boom.
3. Install the DRIVEN ELEMENT as you did the reflector. Then continue with the installation of the DIRECTORS. **Note that the Director Elements do not consistently diminish in length from rear to front, so pay close attention to length and position.**
4. Now begin centering the elements. Use a tape measure to EQUALIZE the amount the element sticking out on each side of the boom. Once you have all the elements centered, sight down the element tips from the rear comparing each side. Look for any obvious discrepancies and correct if found.
5. Install the stainless steel SHAFT RETAINERS onto the element rods. NOTE: The shaft retainers should always be used for permanent and long term antenna installations. For portable or temporary use, or whenever it is anticipated that the antenna will be disassembled within a short time, the retainers may be left off. The button insulators, alone, hold the elements quite securely.

To install, use thumb and index finger to hold a retainer over end of the 3/8 x 3" push tube (retainer dished into tube). Hold the element firmly and start the retainer onto the rod by applying pressure with the push tube. Push the retainer until up tight against the button insulator. Locking pliers, **lightly** clamped to rod and up against opposite button insulator will help maintain center reference. If the retainer is pushed too far, remove the element from the boom, push the retainer off, and start over. Install opposing retainer. Repeat for all elements.



# 222-7EZ ASSEMBLY MANUAL

6. Mount the DRIVEN ELEMENT BLOCK ASSEMBLY to the top of the boom using a single 8-32 X 1-1/4" screw. Orient the block with feed connector facing to the rear.
7. Before installing the COAX BALUN, thread 3/8" SEAL NUTS all the way onto BOTH connectors, with the black Neoprene side of the nuts facing out. Attach balun, routing coax along boom in a single loop. Tighten the connectors **gently** using a 7/16" end wrench. Then back the Seal Nuts out and finger-tighten firmly up against the face of the connectors (or tighten **very gently** with 1/2" end wrench). Form the balun close to the boom and secure with a nylon cable tie. Tie should be snug but not crushing or kinking the coax.
8. Install the 8-32 x 1/4" set screws (internal Allen head - tool supplied) into the SHORTING BARS. Slide the bars onto the 3/16" rod driven element tips and then onto the Driven Element Block Rods. Position the Shorting Bars according to the Dimension Sheet or drawing on previous page: the dimension is between the outer face of the driven element block and the inner face of the shorting bar. Align the bars and rods with each other and tighten the setscrews.
9. The boom to mast plate is mounted at the REAR. Use two 1" U-bolts and the stainless locknuts provided. DO NOT OVER TIGHTEN. 2" U-bolts are provided for mounting the antenna to your mast. Antenna may be mounted in any polarity to metal or non-conductive masts.

THIS COMPLETES THE ANTENNA ASSEMBLY.

## INSTALLATION AND STACKING INFORMATION

A. To optimize the performance of this high quality antenna, always use high quality coax and connectors. Old, corroded, or poor quality materials are common sources of serious performance losses and / or VSWR problems.

B. If possible, test the antenna, connectors and feedline BEFORE installing to your mast or tower. At 6 feet or more the antenna will exhibit performance *similar to* higher mounting heights. Set antenna on a ladder or temporary mast. Check for continuity and that match is close to "specs" across the the rated bandwidth.

### C. STACKING REMINDERS:

1. All driven element blocks MUST be oriented to the same side of boom.
2. All boom-to-mast plates MUST be mounted at the same point on the boom.
3. Feed / phasing lines MUST be of equal electrical length or multiples of 1 wavelength in order to maintain equal phasing in the array. Improper phasing can severely deteriorate performance.

If you are unsure about stacking multiple antennas, please call **M<sup>2</sup>** and let us help you DO IT RIGHT.

Carefully manufactured by:

## **M<sup>2</sup> ANTENNA SYSTEMS, INC.**

4402 N. Selland Ave.

Fresno, CA 93722

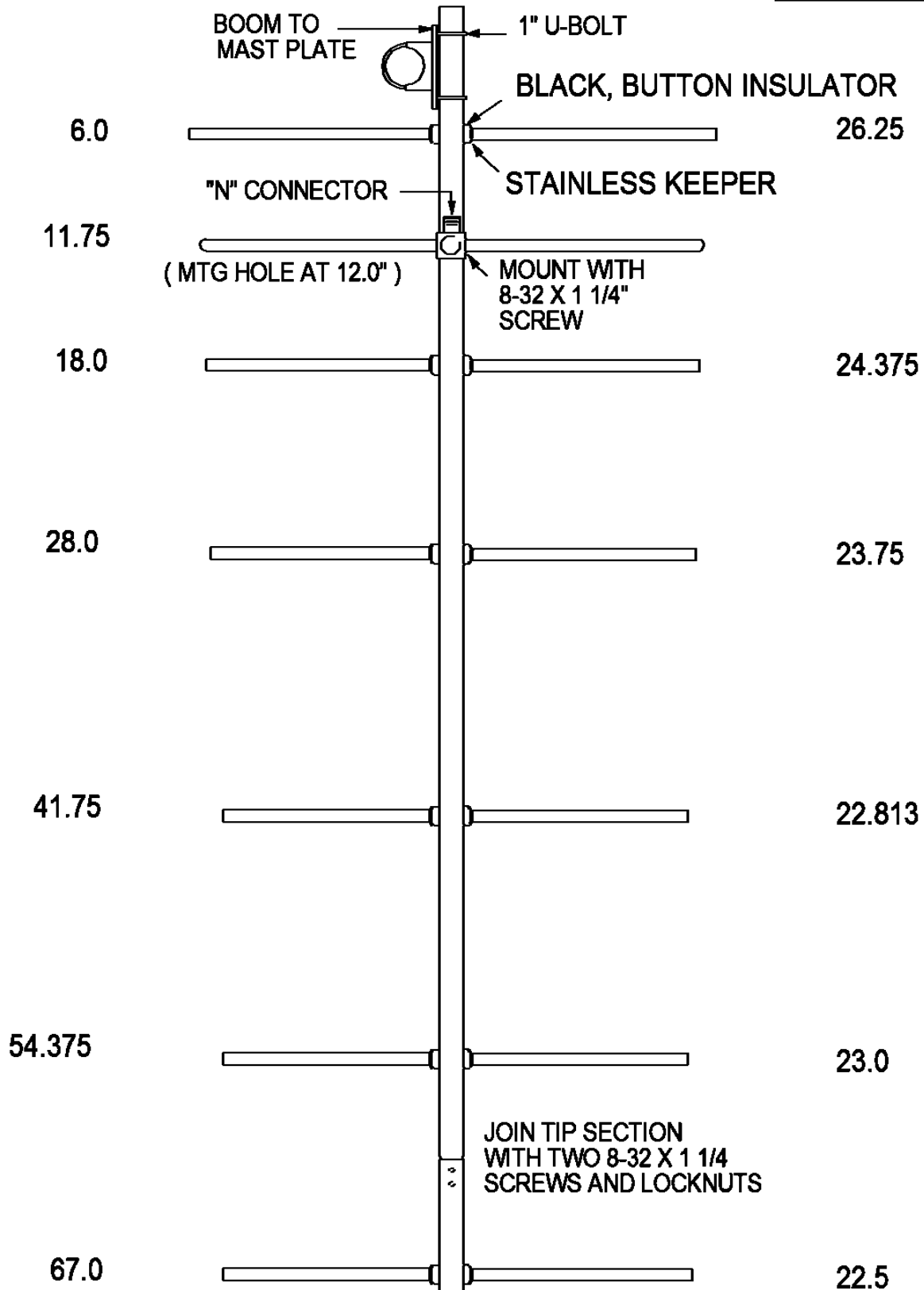
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# 222-7EZ DIMENSION SHEET

ELE. SPACING

ELE. LENGTH



# 222-7EZ PARTS & HARDWARE

DESCRIPTION	QTY
BOOM SECTION, 1 X .058 X 60" SOE .....	1
BOOM SECTION, 1 X .058 X 10.5" STR .....	1
ELEMENTS, 3/16 ROD x Dimension Sheet .....	7
DRIVEN ELEMENT BLOCK ASSEMBLY .....	1
BALUN, RG-6 1/2 WAVE .....	1
BOOM-TO-MAST PLATE, .188 X 3 X 4" .....	1
U-BOLT AND CRADLE, 2' .....	2
U-BOLT, 1" .....	2
ASSEMBLY MANUAL .....	1

## IN HARDWARE BAG:

SHORTING BAR .....	2
BUTTON INSULATORS .....	14
KEEPER, SS .....	14
NUT, 5/16-18 SS .....	4
LOCKWASHER, 5/16 SS .....	4
LOCKNUT, 1/4-20 SS .....	4
SETSCREW, 8-32 X 1/4, SS .....	4
SCREW, 8-32 X 1/4 SS .....	3
LOCKNUT, 8-32 SS .....	2
CABLE TIE, NYLON .....	2
SEAL NUTS, 3/8-32 .....	2
ALLEN HEAD WRENCH, 5/64" .....	1
PUSH TUBE, 3/8 X 3" .....	1

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