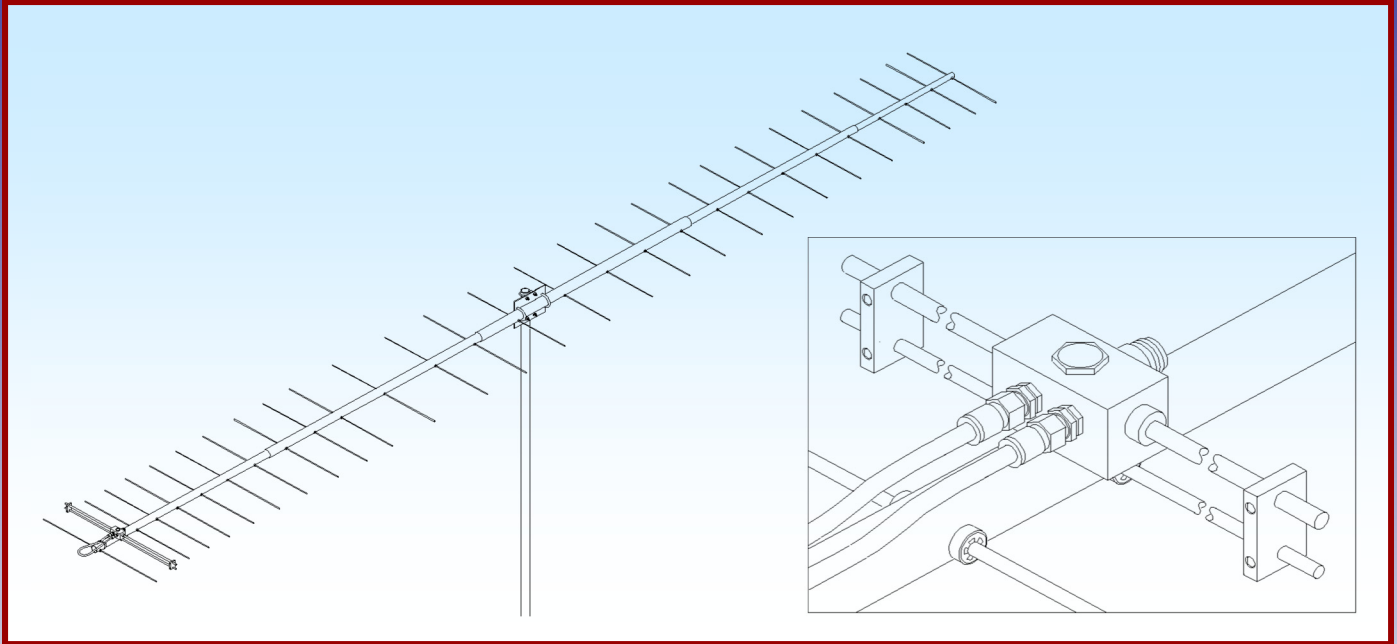




# M2 Antenna Systems, Inc. Model No: 432-9WLA



### SPECIFICATIONS:

Model .....	432-9WLA	Power Handling .....	1 kW
Frequency Range.....	420 To 440 MHz	Boom Length / Dia.....	21' / 1", 1-1/4" & 1-1/2"
*Gain .....	19.44 dBi	Maximum Element Length.....	13-1/2"
Front to back .....	24 dB Typical	Turning Radius:.....	138-1/8"
Beamwidth .....	E=20° H=22°	Stacking Distance.....	72" High & 74" Wide
Feed type .....	Folded Dipole	Mast Size.....	1-1/2" to 2" Nom.
Feed Impedance.....	50 Ohms Unbalanced	Wind area / Survival .....	1.6 Sq. Ft. / 100 MPH
Maximum VSWR.....	1.2:1 Typical	Weight / Ship Wt.....	7.5 Lbs. / 10 Lbs.
Input Connector.....	"N" Female		

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

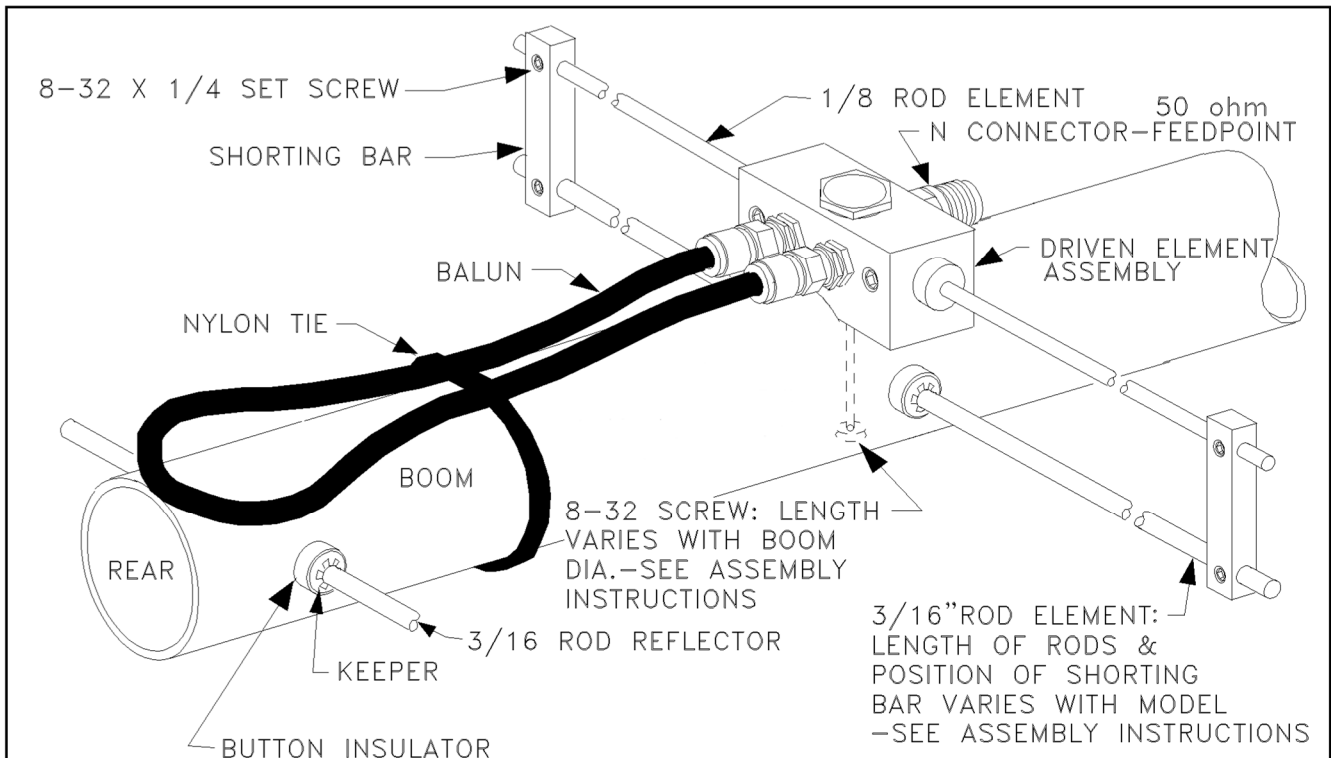
### FEATURES:

The 432-9WLA is a lot of dynamite in a small package. The patterns speak for themselves. The antenna has been optimized for use in an array of two or more antennas, but individually, for its size, it beats anything out there in both pattern and gain!

Mechanically simple, the boom, 1-1/2 inches in the middle, tapers through swaged ends to 1-1/4 and then 1" diameter tips. Polyethylene button insulators with stainless keepers secure the 3/16" rod elements and of course all our antennas feature the CNC machined and 'O' ring sealed Driven Element Module ensuring reliability through weather and time!

# 432-9WLA ASSEMBLY MANUAL

1. Start by laying out the boom sections using the DIMENSION sheet as a guide. Use 8-32 X 1-1/2 screws and locknuts to join 1" to 1-1/4" sections; 8-32 x 1-3/4" screws for 1-1/4" to 1-1/2" sections. Notes for boom section placement: 1-1/2" central boom section has first 5/16" element mounting hole @ 10-5/8" from REAR END. Assemble 1-1/4" section with 6 element holes to this end, followed by 1" x 44" section. Remaining sections assemble to front of 1-1/2" section.
2. Lay out the elements by length and position as shown the DIMENSION sheet. Start with the reflector (13-1/2") element and push on a black button insulator to about 1/2" from center. Insert 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 stainless steel internal locking "KEEPERS" yet. This is easier to do after all the elements are installed in the boom.



3. Install the 3/16" x 12-5/8" rod 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 center the elements. Use a tape measure to EQUALIZE the element length 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. Begin installing the stainless "keepers." Use thumb and index finger to hold a keeper over end of the 3/8 x 3" push tube (keeper dished into tube). Hold the element firmly and start the keeper onto the rod by applying pressure with the push tube. Push the keeper until up tight against the button insulator (Locking pliers, **lightly** clamped up against opposite button insulator will help maintain center reference and keep you from pushing the first keeper too far). Repeat for the opposite side. Continue installing keepers until all elements are locked in place.

# 432-9WLA ASSEMBLY MANUAL

6. Mount the DRIVEN ELEMENT BLOCK to the boom using a single 8-32 X 1-1/4" screw. Orient the block with feed connector facing to center and balun connectors facing to rear.
7. Attach balun and tighten the connectors **gently** using a 7/16" end wrench. Form the balun close to the boom and secure to boom 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 1/8" Driven Element Block Rods. Position the Shorting Bars as specified on the Dimension Sheet. Align the bars and rods with each other and tighten the setscrews.
9. The boom to mast plate is normally mounted at the balance point. Since the feed line represents significant weight it is best to have it (or a temporary equivalent) attached and fastened along the boom with cable ties before balancing the boom and mounting the plate. 1-1/2" U-bolts and the stainless nuts and lock washers provided. DO NOT OVER TIGHTEN. 2" U-bolts are provided for mounting the antenna to your mast.

## 10. INSTALLATION AND STACKING INFORMATION

**FOR HORIZONTAL POLARIZATION**, the antenna may be mounted to a metallic vertical mast or a horizontal NON-METALLIC crossboom (fiberglass tubing or equivalent). If mounted to a horizontal crossboom, route the feedline forward to the boom-to-mast plate, loop down, and bring back to crossboom at least 6" beyond element tips. Antenna pairs are typically stacked one above the other in horizontal polarity. Refer to Specifications Sheet for stacking distances and see Stacking Reminders, below.

**FOR VERTICAL POLARIZATION**, the antenna may be mounted to a NON METALLIC VERTICAL MAST (fiberglass tubing or equivalent) or a horizontal metallic cross boom. If mounted to a vertical mast, route the feed line forward to the boom-to-mast plate, then loop out at a right angles to the boom, and bring down to the mast at least 6 inches BELOW THE ELEMENT TIPS. Antenna pairs are typically stacked side by side on a horizontal cross boom. Refer to Specifications Sheet for stacking distances and see Stacking Reminders, below.

**A.** To protect your investment in this high performance antenna, always use high quality coax and connectors. Old, corroded, or poor quality materials are common sources of serious performance losses.

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

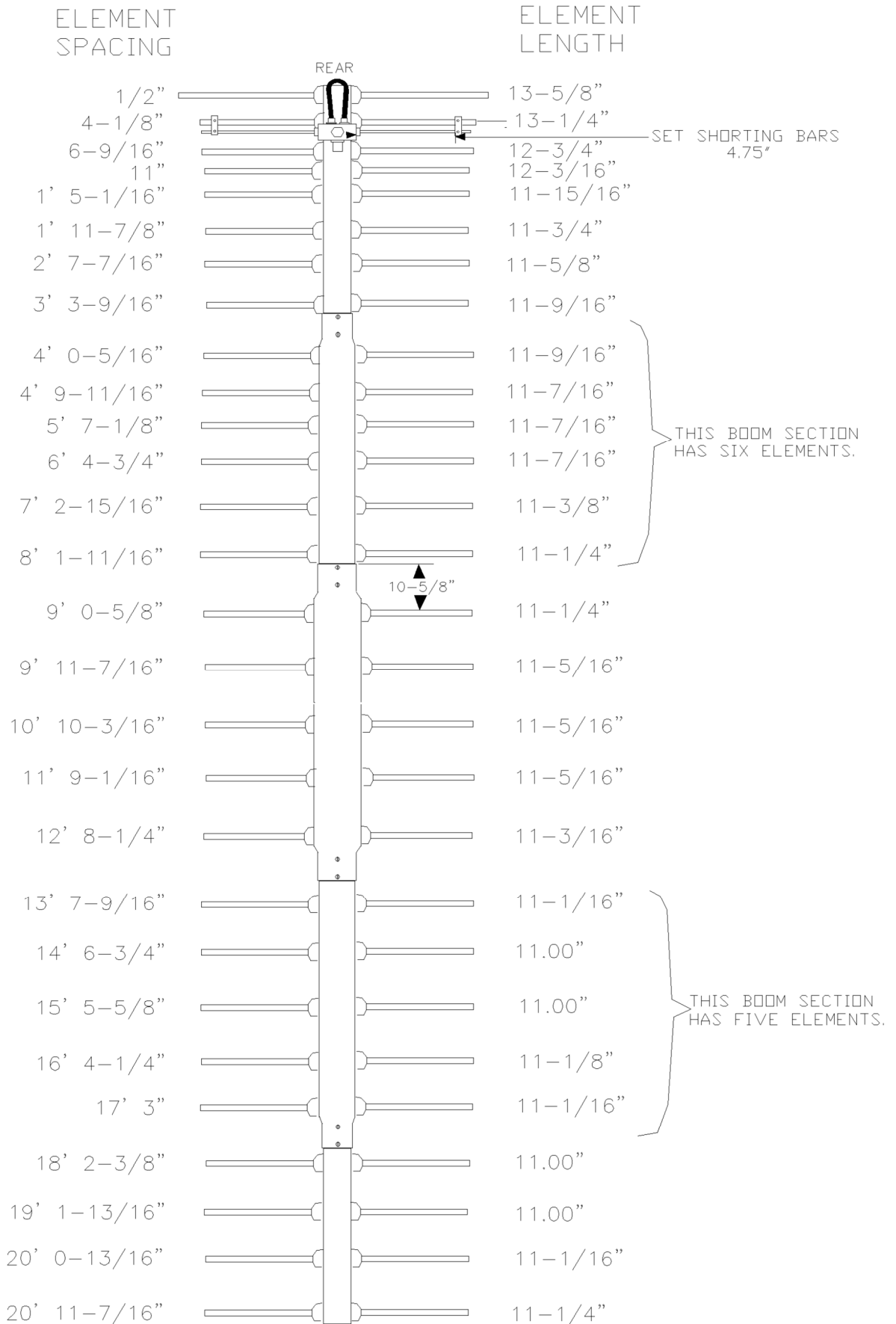
### C. STACKING REMINDERS:

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!

THIS COMPLETES THE ANTENNA ASSEMBLY.

# 432-9WLA DIMENSION SHEET



# 432-9WLA PARTS & HARDWARE

DESCRIPTION	QTY
BOOM SECTION, 1-1/2 X .058 X 60" SBE .....	1
BOOM SECTION, 1-1/4 X .058 X 60" SOE .....	2
BOOM SECTION, 1 X .058 X 44" STR .....	1
BOOM SECTION, 1 X .058 X 40" STR .....	1
ELEMENTS, 3/16 ROD x Dimension Sheet .....	28
DRIVEN ELEMENT BLOCK.....	1
BALUN, RG-6 1/2 WAVE .....	1
BOOM-TO-MAST PLATE, .188 X 6" X 4".....	1
U-BOLT AND CRADLE, 2".....	2
U-BOLT AND CRADLE, 1-1/2".....	2
ASSEMBLY MANUAL.....	1

## IN HARDWARE BAG:

SHORTING BAR (M2ASB0080) .....	2
BUTTON INSULATORS.....	56
KEEPER, SS.....	56
NUT, 5/16-18 SS.....	8
LOCKWASHER, 5/16 SS .....	8
SETSCREW, 8-32 X 1/4, SS.....	4
SCREW, 8-32 X 1-1/4 SS .....	1
SCREW, 8-32 X 1-1/2 SS .....	4
SCREW, 8-32 X 1-3/4 SS .....	4
LOCKNUT, 8-32 SS .....	8
CABLE TIE, NYLON .....	5
ALLEN HEAD WRENCH, 5/64".....	1
PUSH TUBE, 3/8 X 3" .....	1

CAREFULLY MANUFACTURED BY:

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

4402 N. Selland Ave.

Fresno, CA 93722

(559) 432-8873 Fax: 432-3059

[www.m2inc.com](http://www.m2inc.com) Email: [sales@m2inc.com](mailto:sales@m2inc.com)