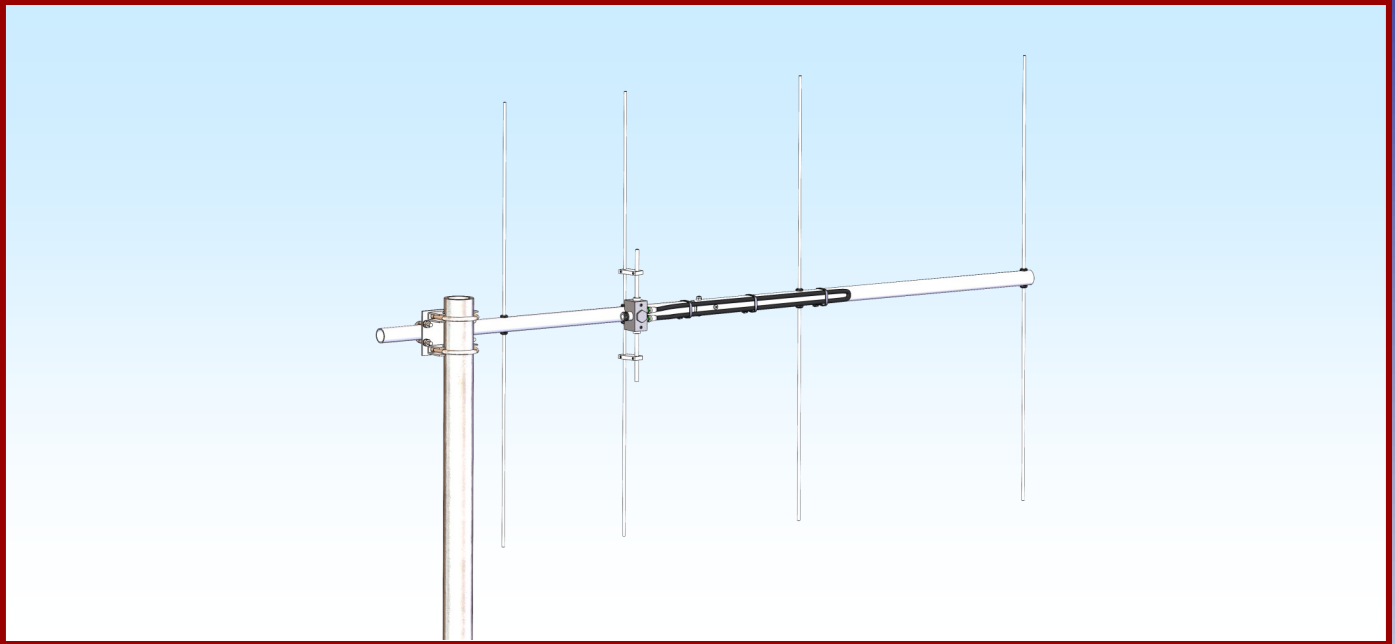




M2 Antenna Systems, Inc. Model No: 2M4X



SPECIFICATIONS:

Model	2M4X	Power Handling	1.5 kW
Frequency Range	144 To 148 MHz	Boom Length / Dia	48" / 1"
*Gain	9.6 dBi	Maximum Element Length.....	40-1/2"
Front to back	20 dB Typical	Turning Radius:	55"
Beamwidth	E=54° H=74°	Stacking Distance	66" High & 80" Wide
Feed type	"T" Match	Mast Size	1-1/2" to 2" Nom.
Feed Impedance.	50 Ohms Unbalanced	Wind area / Survival	0.50 Sq. Ft. / 100 MPH
Maximum VSWR	1.5:1	Weight / Ship Wt.....	3 Lbs. / 4 Lbs.
Input Connector.....	"N" Female		

***Subtract 2.14 from dBi for dBd**

FEATURES:

M2 is always trying to design and build new antennas to fit the needs of amateur radio operators. The "X" series of antennas are all designed to keep the packaging under 48" long to minimize oversize surcharges applied by shippers. The "X" series antennas offer the same performance as its predecessor, but with shorter boom sections. The boom sections also have a thicker wall for added strength. A side benefit of the "X" series antennas are that they are more portable with the smaller sections. The 2M4X replaces our very popular 2M4.

Each models performance is optimized for a specific mode and frequency range, with no compromises to achieve unneeded bandwidth. The 2M4X covers 144-148 MHz .Where do you want to make yourself heard? The 2M4X is an ideal building blocks for a small turning radius, high-gain stacked array. Great for QTH's that won't permit a long boom Yagi. The 2M4X can be stacked on a cross boom for the same gain increases, and the turning radius is still a very manageable 10 ft.

The heart of these antennas is a driven element module originally designed for maritime ATS satellite service. All connectors are O-ring sealed to the CNC machined block. Internal connections are sealed with a space-age silicone gel with nearly 4 times the dielectric strength of air. The balun connectors are triple sealed on the coax and nut-sealed at the block connectors. The type "N" feed connector uses a gold-plated, beryllium copper center pin.

Elements are 6061-T6 3/16" solid rod with UV stabilized polyethylene Button insulators and stainless steel keepers. Thousands of these type elements are in amateur and commercial service with NO failures! Booms are constructed of 6061-T6 aluminum alloy tubing. Other key electrical and mechanical components are CNC machined for accuracy and durability. All hardware is stainless steel except the U-bolts. For uncompromising performance and long term electrical / mechanical integrity, the 2M4X is unmatched.

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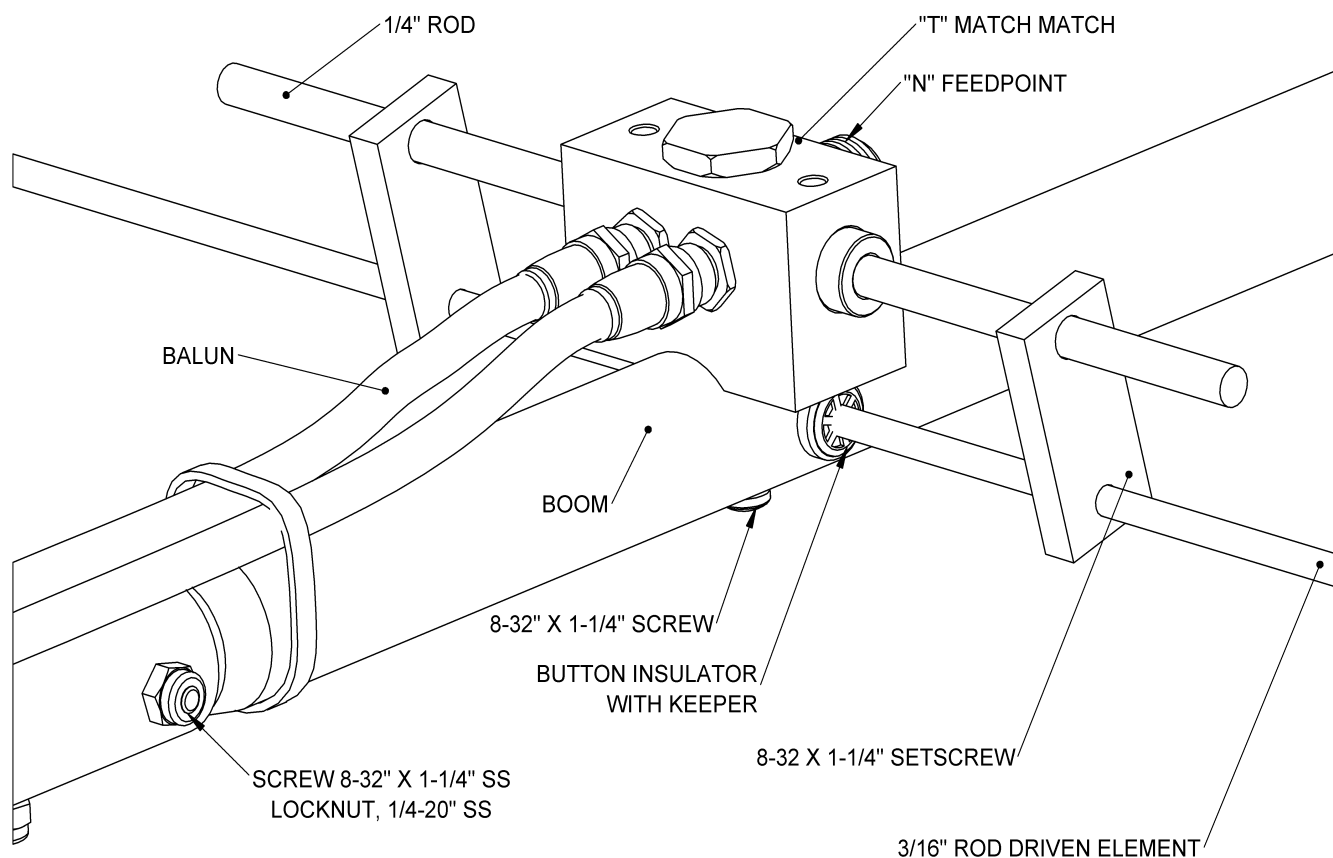
11/29/21
Rev.01

2M4X ASSEMBLY MANUAL

Tools handy for assembly process: screwdriver, 11/32" spin-tite or socket, 7/16" and 1/2" end wrenches / sockets, measuring tape.

1. Lay out the elements by length and position as shown the DIMENSION sheet. Start with the REFLECTOR (longest) element. Balance on finger to find rough center and push on a black button insulator to about 1/2" from center. Push the element through the holes 10" 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 SHAFT RETAINERS yet. This is easier to do after all the elements are installed in the boom. Install the 3/16" rod DRIVEN ELEMENT as you did the reflector and then the DIRECTORS.
2. Now accurately center the elements. Use a tape measure to EQUALIZE the amount the element sticking out on each side of the boom. Begin installing the stainless SHAFT RETAINERS. 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 up against opposite button insulator will help maintain center reference and keep you from pushing the first retainer too far). Repeat for the opposite side. Continue installing retainers until all elements are locked in place.
3. Mount the "T" MATCH 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 the rear and balun connectors facing forward.
4. Attach balun to the Block and tighten the connectors *gently* using a 7/16" end wrench. A lot of torque is unnecessary. Form the balun close to the boom and secure with a nylon cable ties. Ties should be snug but not crushing or kinking the coax.

TYPICAL VHF HARDWARE ARRANGEMENT



2M4X ASSEMBLY MANUAL

5. 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 as specified on the Dimension Sheet: 1-3/4". Align the bars and rods with each other and tighten the setscrews.
6. The boom to mast plate is normally mounted at the rear. Use two 1" U-bolts and the stainless nuts and lock washers provided (cradles are not used). DO NOT OVER TIGHTEN. 2" U-bolts are provided for mounting the antenna to your mast.

THIS COMPLETES THE ANTENNA ASSEMBLY.

7. INSTALLATION AND STACKING INFORMATION

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 feedline 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 match across the rated bandwidth.

C. REAR MOUNTING: The 2M4X is easily rear-mounted in either horizontal or vertical polarity. A metal mast or crossboom will have no effect on performance.

D. CENTER MOUNTING: Metal masts or crossbooms are OK for center mounting the antenna IF they are at right angles to the element plane. ALWAYS use a NON-CONDUCTIVE mast or crossboom IF it will be in the element plane. A metal mast in the element plane WILL adversely affect performance. The feed coax, too, if routed to the center, must exit the boom at right angles to the element plane. For example, with a vertically polarized antenna on a vertical non-conductive mast, loop the coax out at a right angle from the elements and reattach to mast at least 6" below the element tips. Or, the coax can exit the rear of the boom and loop back to the mast.

Fiberglass is the prime material for a non-conductive mast because of its strength and weather resistance. Wooden rod can also be used or thick-wall PVC pipe with a wooden rod inside for support.

Carefully manufactured by:

M² ANTENNA SYSTEMS, INC.

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Fresno, CA 93722

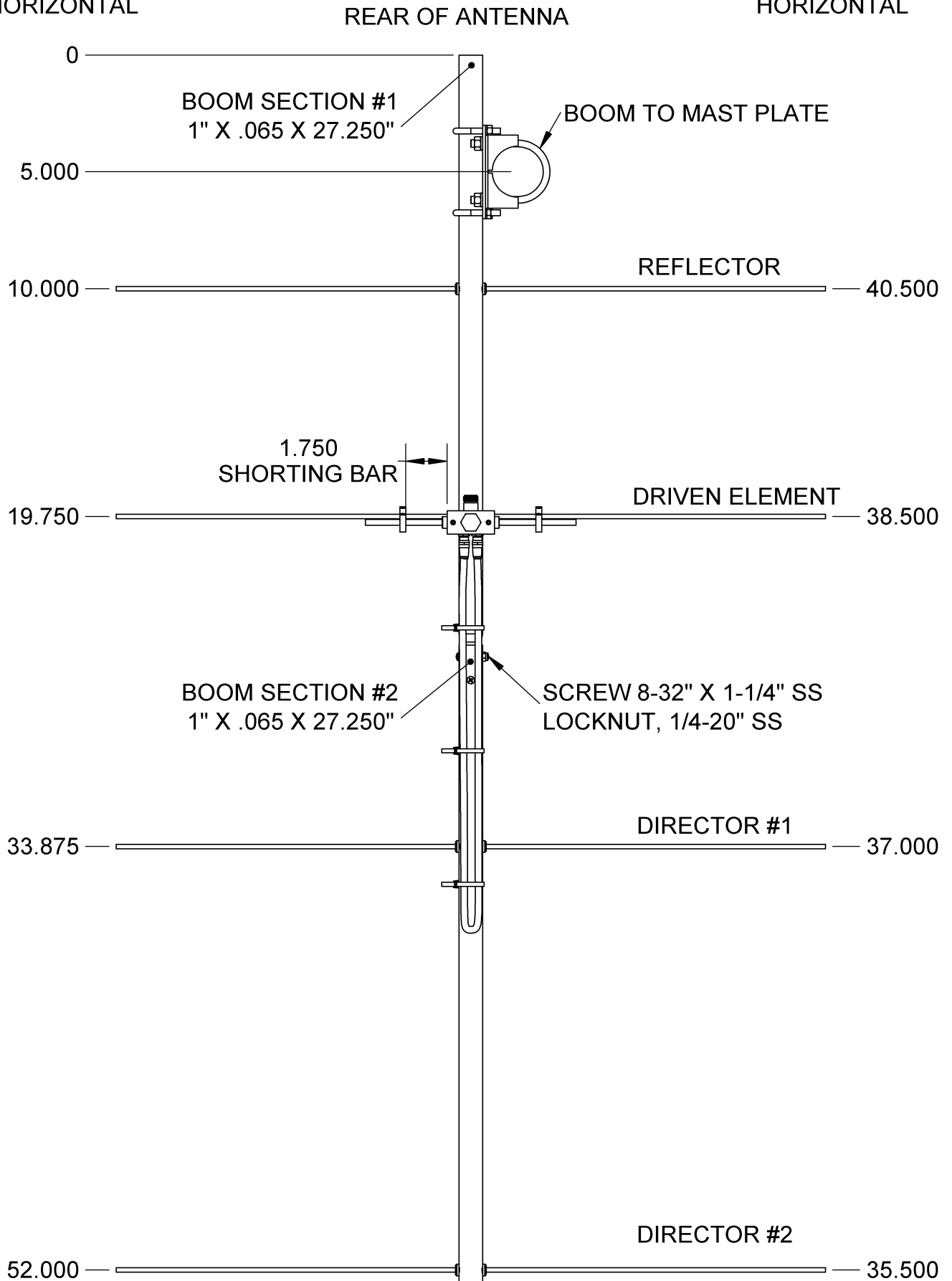
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2M4X DIMENSION SHEET

ELEMENT SPACING
HORIZONTAL

ELEMENT LENGTHS
HORIZONTAL



2M4X PARTS & HARDWARE

DESCRIPTION	QTY
BOOM, 1 X .065 X 27-1/4" ALUM (M2ABS2M4X-1).....	1
BOOM, 1 X .065 X 27-1/4" ALUM (M2ABS2M4X-2).....	1
ELEMENTS, 3/16" ROD ALUM	4
DRIVEN ELEMENT ASSEMBLY (SADEA2MVHF1).....	1
BTM PLATE, 3 X 4 X 1/8" (M2APT0019).....	1
BALUN, RG-6	1
U-BOLT AND CRADLE, 2"	2
U-BOLT, 1"	2
ASSEMBLY INSTRUCTIONS.....	1
HARDWARE BAG	
SHORTING BAR (M2ASB0090)	2
NUT, 5/16-18 SS.....	4
LOCK WASHER, 5/16" SPLIT RING SS.....	4
NUT, 1/4-20 SS	4
LOCK WASHER, 1/4" SPLIT RING SS	4
SETSCREW, 8-32X1/4" INT. ALLEN, SS.....	4
SCREW, 8-32 X 1-1/4" PAN HEAD SS	3
LOCKNUT, 8-32" SS.....	2
BUTTON INSULATOR 3/16" BLACK POLY	8
SHAFT RETAINER, 3/16" SS.....	8
PUSH TUBE, 3 X 3/16" (RETAINER TOOL).....	1
ALLEN WRENCH, 5/64"	1
CABLE TIE	3

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