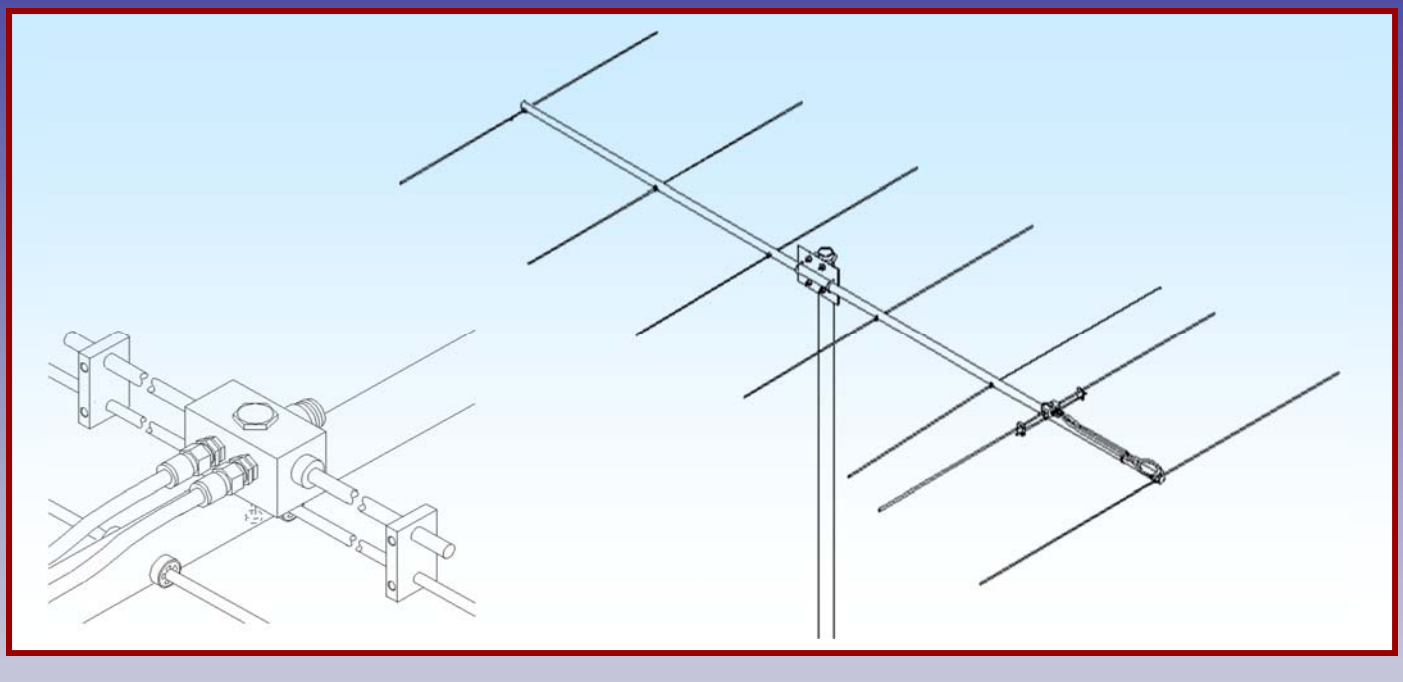
M2 Antenna Systems, Inc.
Model No: 2M7



SPECIFICATIONS:

Model	2M7
Frequency Range	144 To 148 MHz
*Gain	12.3 dBi
Front to back	20 dB Typical
Beamwidth	E=43° H=50°
Feed type	"T" Match
Feed Impedance.	50 Ohms Unbalanced
Maximum VSWR	1.2:1 Typical
Input Connector	"N" Female
Power Handling	2.5 kW
Boom Length / Dia	8' 10" / 1"
Maximum Element Length	40-1/2"
Turning Radius:	63-1/2"
Stacking Distance	6' 8" High & 7' 3" Wide
Mast Size	1-1/2" to 2" Nom.
Wind area / Survival	0.50 Sq. Ft. / 100 MPH
Weight / Ship Wt.	3 Lbs. / 4 Lbs.

***Subtract 2.14 from dBi for dBd**

FEATURES:

The 2M7 is a computer optimized yagi that will outperform longer old design antennas. The 2M7 covers the whole band with only slight performance degradation at the band edges. Side lobes are very low and it is perfect for stacking 2 or more. Its light weight and durability make it great for portable hill topping.

The 2M7 is built for long term electrical and mechanical integrity. The CNC machined "T" Match Block features O-ring sealed connectors and is internally sealed with a space-age silicone gel with nearly 4 times the dielectric strength of air. Elements are 6061-T6 3/16" aluminum rod, mounted through the boom on UV stabilized button insulators. All hardware is stainless steel except U-bolts. Other key electrical and mechanical parts are CNC machined for accuracy and durability.

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2M7 ASSEMBLY MANUAL

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

1. Assemble the boom sections using the 8-32 X 1-1/4 screws and locknuts.

2. 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. Install the element through the holes at the boom and push on 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.

3. Install the 3/16” rod DRIVEN ELEMENT as you did the reflector. Then continue with the installation of the DIRECTORS.

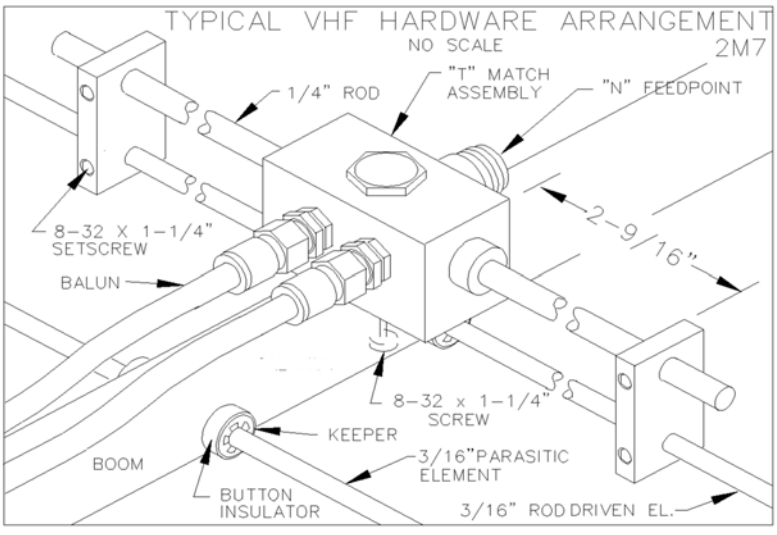
4. Now begin centering the elements. Use a tape measure to EQUALIZE the the element length on each side of the boom. Once you have all the elements centered, sight down the element tips from the rear comparing each side. Look for any obvious discrepancies and correct if found.

5. Begin installing the stainless SHAFT RETAINERS. Use thumb and index finger to hold a retainer over end of the 3/8 x 3” push tube (champher inner edge of 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.

6. 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 forward and balun connectors facing to rear. Block orientation may be reversed if you wish feedline to exit rear of boom.

7. Attach balun to the Block and tighten the connectors ***gently*** using a 7/16" end wrench. Coil balun once, if necessary, so balun does not extend beyond end of boom. Form the balun close to the boom and secure with a nylon cable tie, 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 as specified on the Dimension Sheet: 2-9/16” from the outer face of the block to the inner face of the bar. 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 feedline represents significant weight it is best to have it attached and fastened along the boom with cable ties before final mounting of the plate. Use two 1" U-bolts and the stainless nuts and lock washers provided (no cradles are used). DO NOT OVER TIGHTEN. 2" U-bolts are provided for mounting the antenna to your mast. Never mount to a metallic mast or crossboom in the same plane as the elements. Pattern and performance will deteriorate. See next step.

10. **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 band. It should be 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.

FOR HORIZONTAL POLARIZATION, the antenna may be mounted to a metallic vertical mast or a horizontal NON-METALLIC crossboom (no conductive material in element plane). 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. Antennas are typically stacked one above the other in horizontal polarity. ***H plane stacking distance is 7'.*** See Stacking Reminders, below.

FOR VERTICAL POLARIZATION, the antenna may be mounted to a NON METALLIC VERTICAL MAST (no conductive material in element plane) or a horizontal metallic crossboom. If mounted to a vertical mast, route the feed line forward to the boom-to-mast plate, loop out at a right angles to the boom, and bring down to the mast at least 6 inches BELOW THE ELEMENT TIPS. Or, the feedline can be routed off the rear of the boom and returned to mast as above. Antennas are typically stacked side by side on a horizontal crossboom. ***Stacking distance is 7'.*** See Stacking Reminders, below.

If you are unsure about stacking multiple antennas, please call **M²** and let us help you DO IT RIGHT!

CAREFULLY MANUFACTURED BY:

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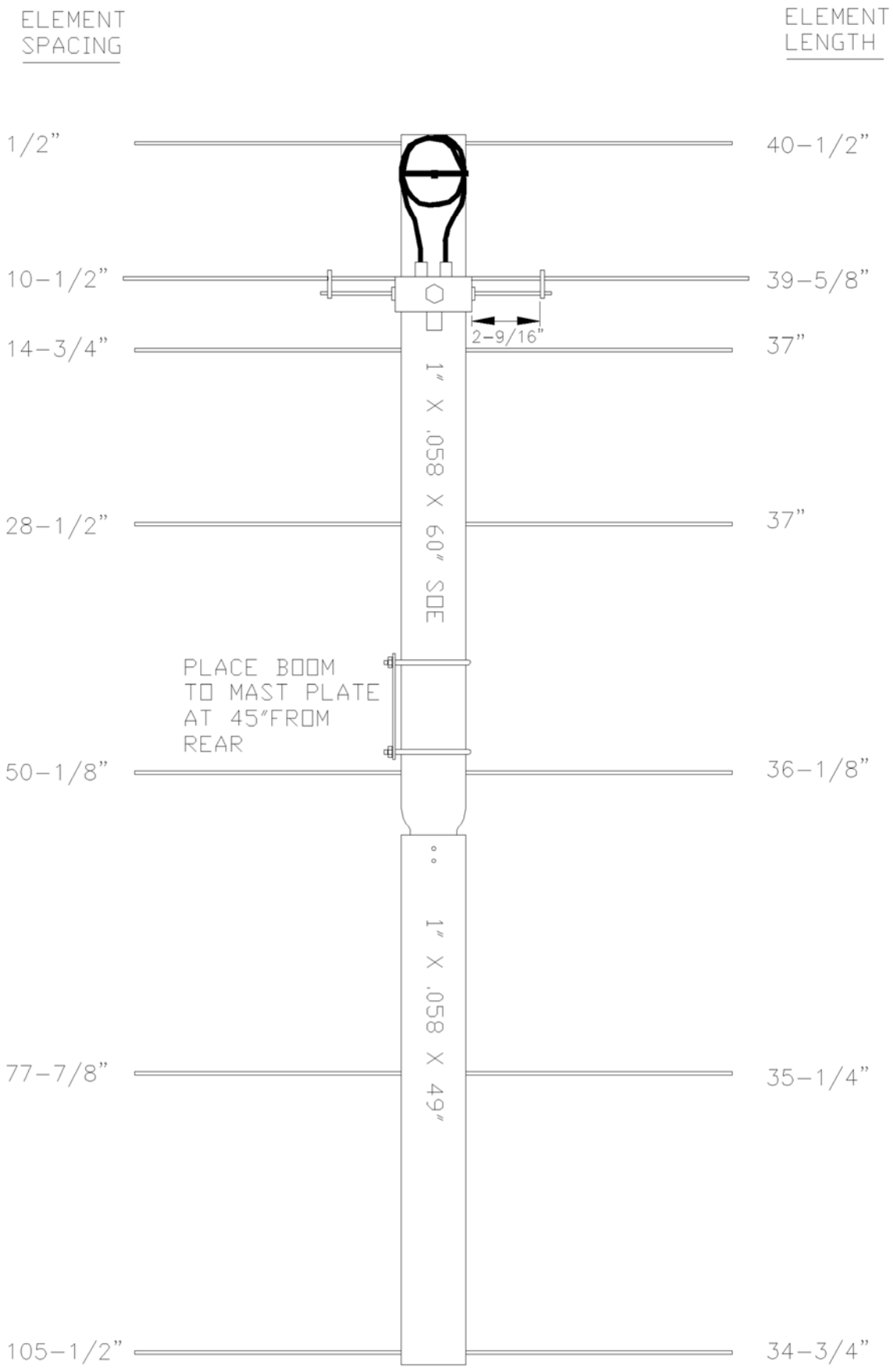
2M7 DIMENSION SHEET



2M7 PARTS & HARDWARE

DESCRIPTION	QTY
BOOM SECTION, 1 X .058 X 60” SOE	1
BOOM SECTION, 1 X .058 X 49” STR	1
ELEMENTS, 3/16 ROD x Dimension Sheet	7
“T” MATCH BLOCK ASSEMBLY	1
BALUN, RG-6 1/2 WAVE	1
BOOM-TO-MAST PLATE, .125 X 3” X 4”	1
U-BOLT 1”	2
U-BOLT AND CRADLE, 2”	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
NUT, 1/4-20 SS	4
LOCKWASHER, 1/4 SS	4
SETSCREW, 8-32 X 1/4, SS	4
SCREW, 8-32 X 1-1/4 SS	3
LOCKNUT, 8-32 SS	2
CABLE TIE, NYLON	3
ALLEN HEAD WRENCH, 5/64”	1
PUSH TUBE, 3/8 X 3”	1

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