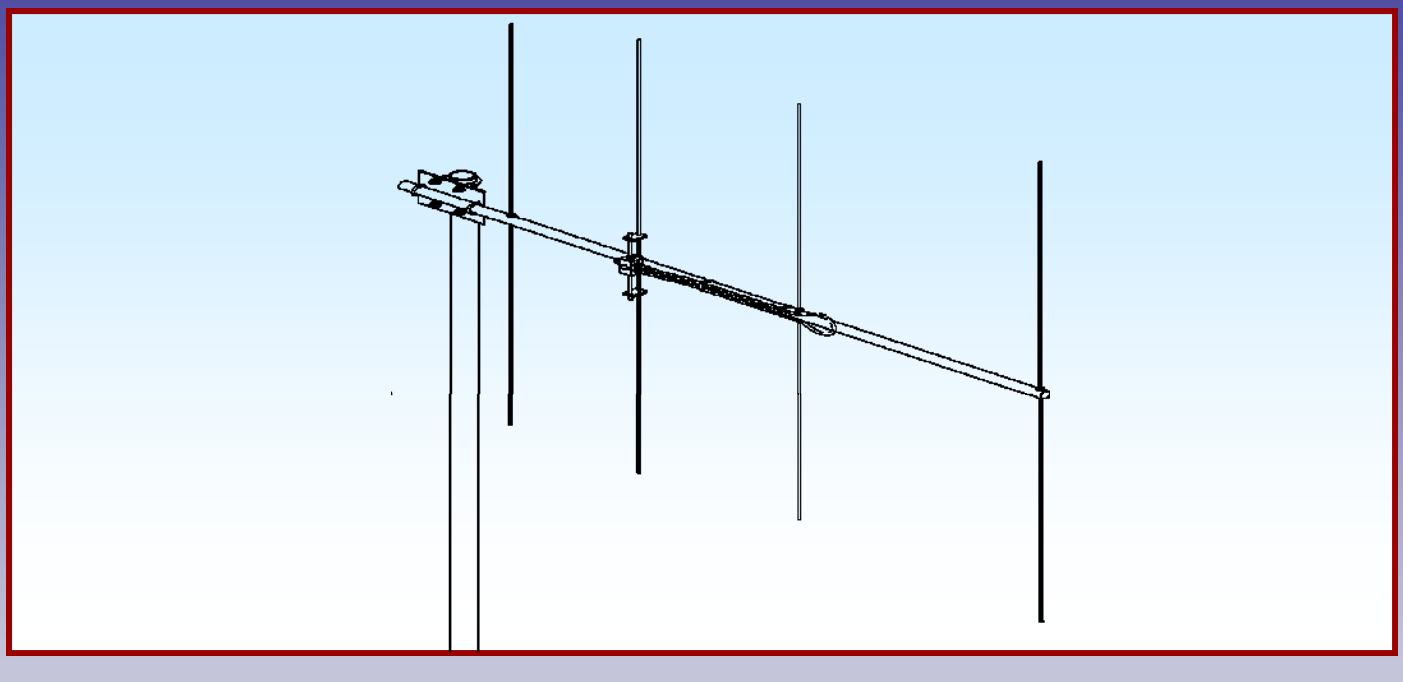
M2 Antenna Systems, Inc.
Model No: 122-4BBA



SPECIFICATIONS:

Model	122-4BBA
Frequency Range	116 To 125 mHz
*Gain, (FS)	6.66 dBd / 8.8 dBi
Front to back	18 dB Typical
Beamwidth	E=40° H=50°
Feed Impedance.	50 Ohms Unbalanced
Maximum VSWR	>1.5:1
Input Connector	"N" Connector
Power Handling	1500 Watts
Boom Length / Dia	60" / 1" Dia
Element Type / Mounting	3/16"Aluminum Rod
Mounting	Insulated
Mounting / Polarity	Rear / Vertical or Horiz.
Mast Size	1-1/2" To 2" Nom.
Wind area / Survival	0.5 Sq. Ft. / 100 MPH
Weight / Ship Wt.	6 Lbs. / 7 Lbs.

***Subtract 2.14 from dBi for dBd / FS = Free Space**

FEATURES:

The **122-4BBA** antenna uses a driven element module originally designed for maritime ATS satellite service. All connectors are O-ring sealed to a CNC machined aluminum block. Internal connections are sealed in a 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. Other key electrical and mechanical components are CNC machined for accuracy and durability.

Elements are 6061-T6 3/16" solid rod, centered through the boom on UV stabilized, polyethylene insulators, and secured with stainless steel shaft retainers. Thousands of these type elements are in commercial service with NO failures. The boom is constructed of 6063-T832 aluminum alloy tubing. All hardware is stainless steel except the U-bolts. For uncompromising performance and long term electro-mechanical integrity, the **122-4BBA** is unmatched.

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122-4BBA ASSEMBLY MANUAL

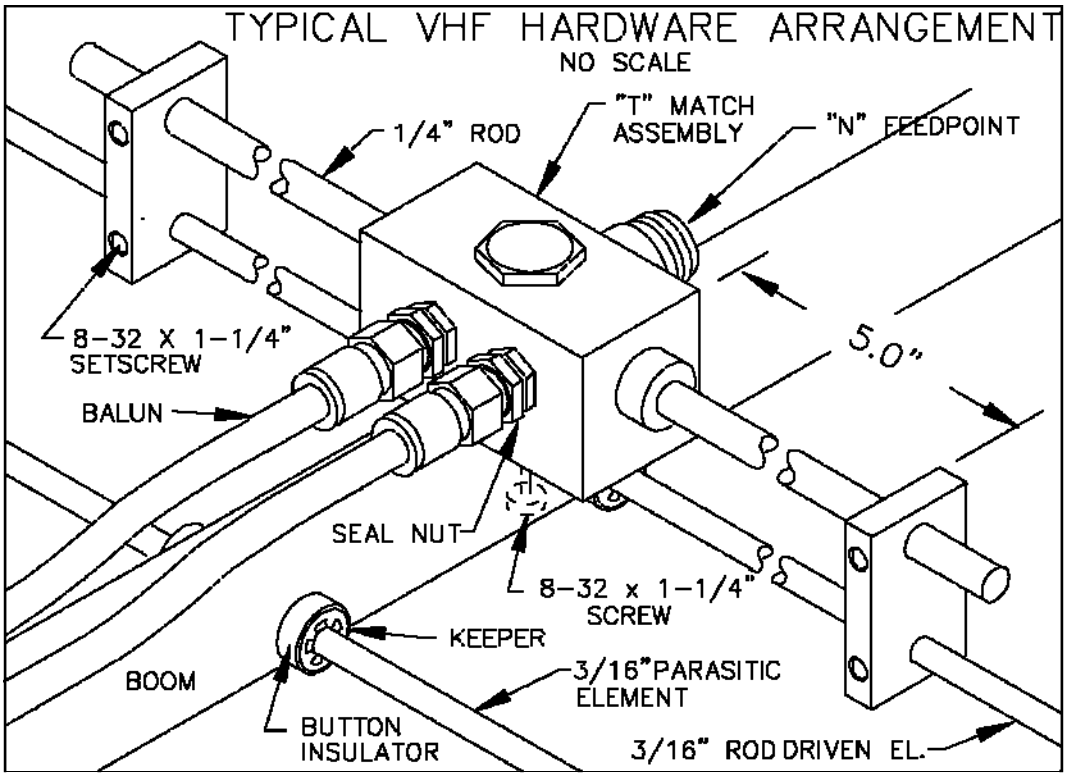
Tools handy for assembly process: screwdriver, 11/32” spin-tite or socket, 7/16” and 1/2” end wrenches / sockets, measuring tape.

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.

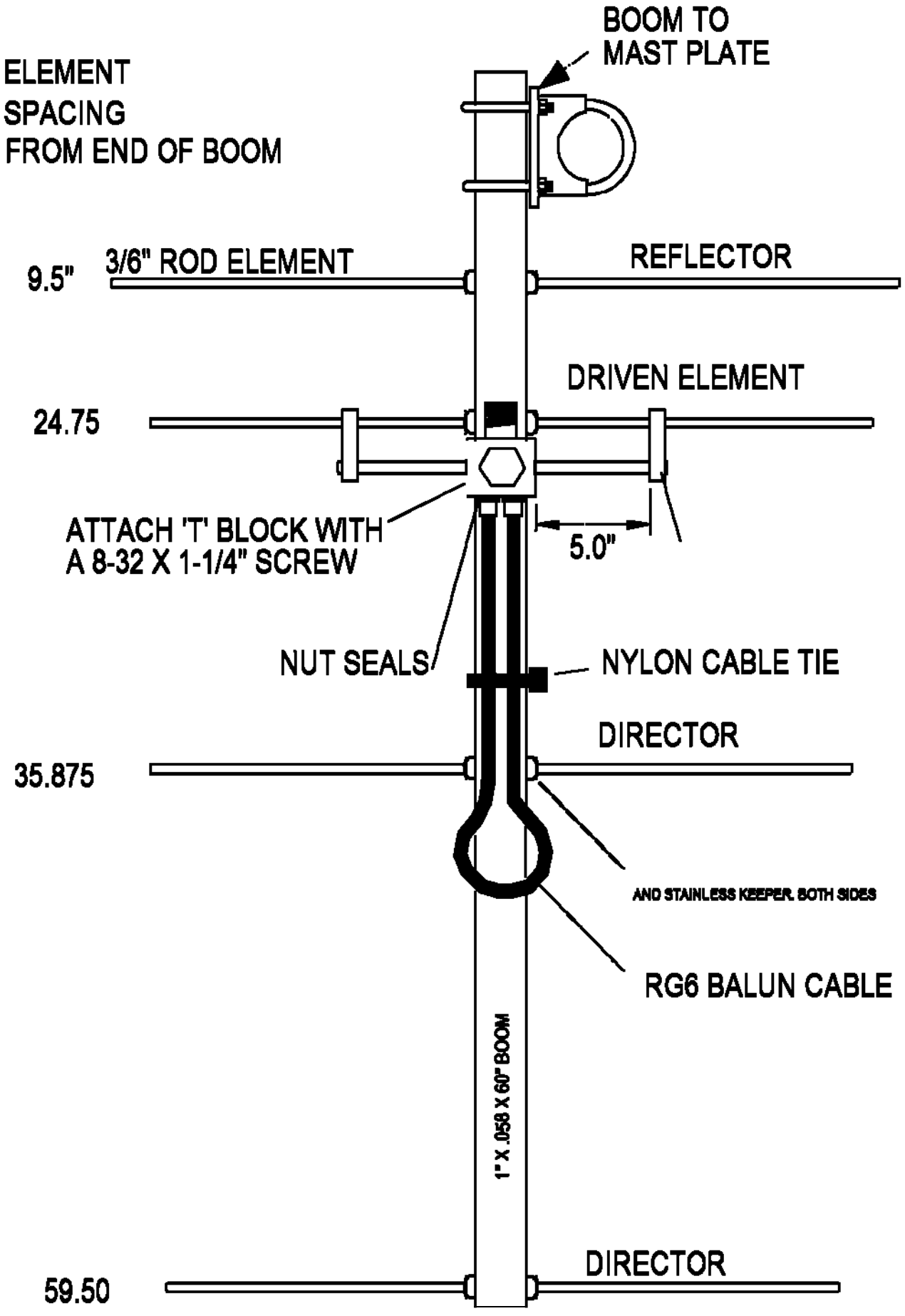
2. Now accurately center the elements. Use a tape measure to EQUALIZE the amount the element sticking out on each side of the boom. Begin installing the stainless SHAFT RETAINERS.” Use thumb and index finger to hold a retainer over end of the 3/8 x 3” push tube (retainer dished into tube). Hold the element 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. Before installing the balun, thread a 3/8” SEAL NUT all the way onto each connector, with the black Neoprene face of the nuts facing out. Attach balun to the Block and tighten the connectors ***gently*** using a 7/16" end wrench. Once the connectors are tight, back the Seal Nuts out and finger-tighten firmly up against the face of the connectors (or tighten ***gently*** with 1/2” end wrench). A lot of torque is unnecessary. 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.



122-4BBA DIMENSION SHEET



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. 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 122-4BBA 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 it’s 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:

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122-4BBA PARTS & HARDWARE

Description	Qty
Boom, 1 x .058 x 60" alum.	1
Elements, 3/16" rod alum.	4
“T” match block &1/4” rods	1
Boom to mast plate 3 x 4 x 1/8 "	1
Balun, RG-6	1
U-bolt and cradle, 2"	2
U-bolt, 1 1/2”	2
U-bolt, 1"	2
Assembly instructions	1

Hardware Bag

Shorting Bar	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, 8-32 x 1/4” int. Allen head, ss	4
Screw, 8-32 x 1-1/4" pan head ss	1
Seal Nut	2
Button insulator 3/16" black polyethylene	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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