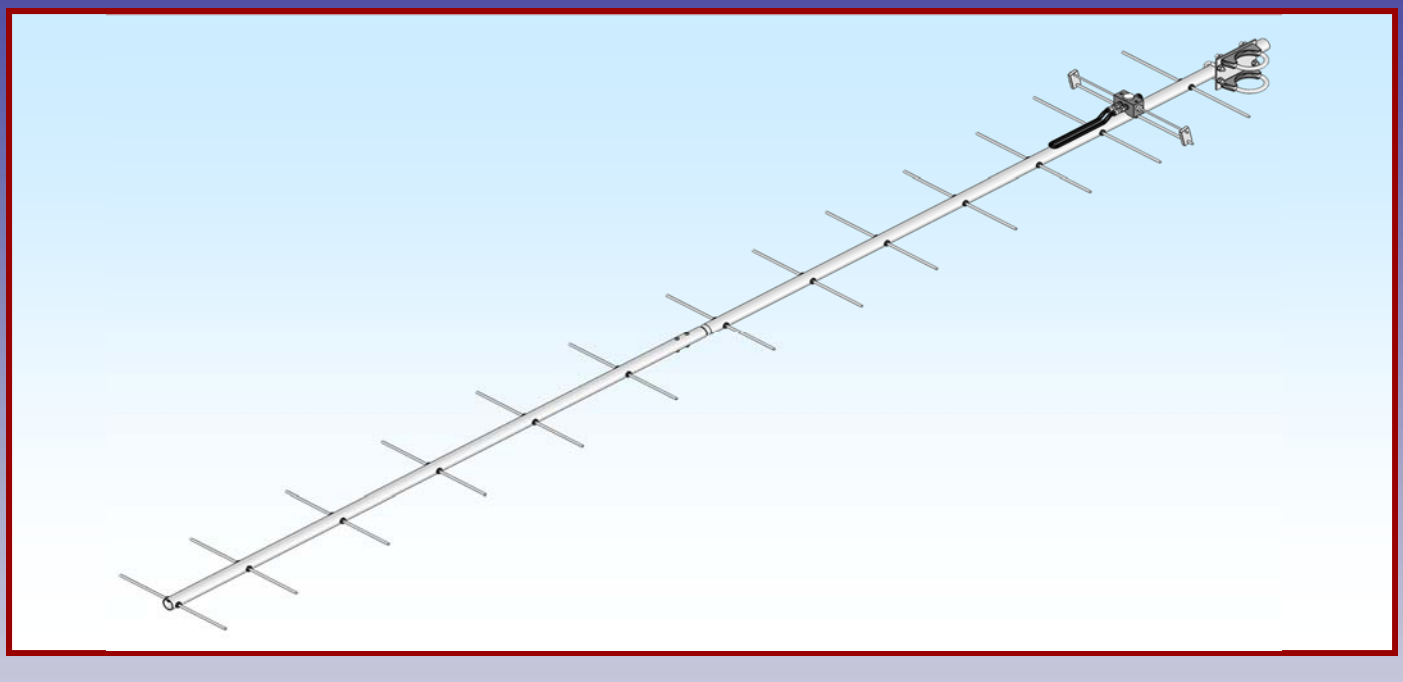
M2 Antenna Systems, Inc.
Model No: 456-14RM



SPECIFICATIONS:

Model	456-14RM
Frequency Range	449.9 To 462 mHz
*Gain	15.8 dBi
Front to back	23 dB Typical
Beamwidth	E=30° H=34°
Feed type	Folded Dipole
Feed Impedance.	50 Ohms Unbalanced
Maximum VSWR	1.2:1 Typical
Input Connector	"N" Female

Power Handling	1.0 kW
Boom Length / Dia	111" / 1"
Maximum Element Length	12.875"
Turning Radius:	108'
Stacking Distance	45" High & 47" Wide
Mast Size	2"
Wind area / Survival	1.0 Sq. Ft. / 100 MPH
Weight / Ship Wt.	4 Lbs. / 6 Lbs.

***Subtract 2.14 from dBi for dBd**

FEATURES:

The 456-14RM is a computer optimized broadband yagi featuring an excellent pattern and good gain across its bandwidth. It can be mounted vertically or horizontally and is ideal for stacking two or more for additional gain. Its light weight yet sturdy construction keep the cost low and the performance high. Use it for DIGITAL, FM, LONG HAUL TROPO, ETC.

The heart of the 456-14RM 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. The 456-14RM design joins a large family of similar yagis for frequencies up to 2500 mHz. Many accessories like stacking frames, power dividers + AZEL Packages are also available.

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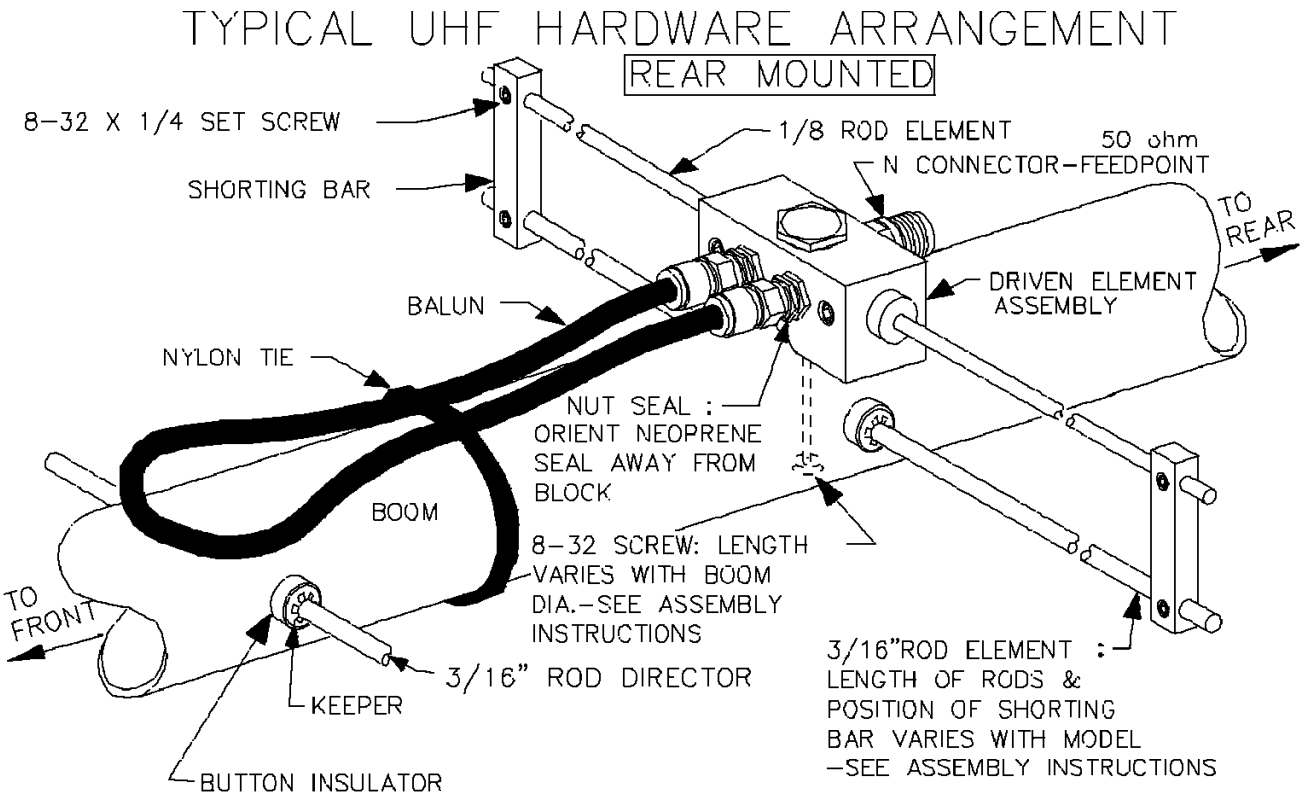
10/01/15
Rev.00

456-14RM ASSEMBLY MANUAL

1. Start by laying out the boom sections using the DIMENSION sheet as a guide. Use 8-32 X 1-1/4 screws and locknuts to join sections. Sections may be swaged to fit each other or use short internal splice sections.

2. Lay out the elements by length and position as shown the DIMENSION sheet. Start with the reflector (longest) element 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 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" 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 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. 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.

6. Mount the DRIVEN ELEMENT BLOCK to the boom using a single 8-32 X 1-1/4" screw and lockwasher. Orient the block with feed connector facing to the rear and balun connectors facing to the front.

7. 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 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 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: the distance given is between the outer edge of the Driven Element Block and the inner edge of the Shorting Bar. Align the bars and rods with each other and tighten the setscrews.

9. The boom to mast is mounted at the rear of the boom. 1" 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.

Stacking? Call **M^2**and let us help you DO IT RIGHT.

THIS COMPLETES THE ANTENNA ASSEMBLY.

CAREFULLY MANUFACTURED BY:

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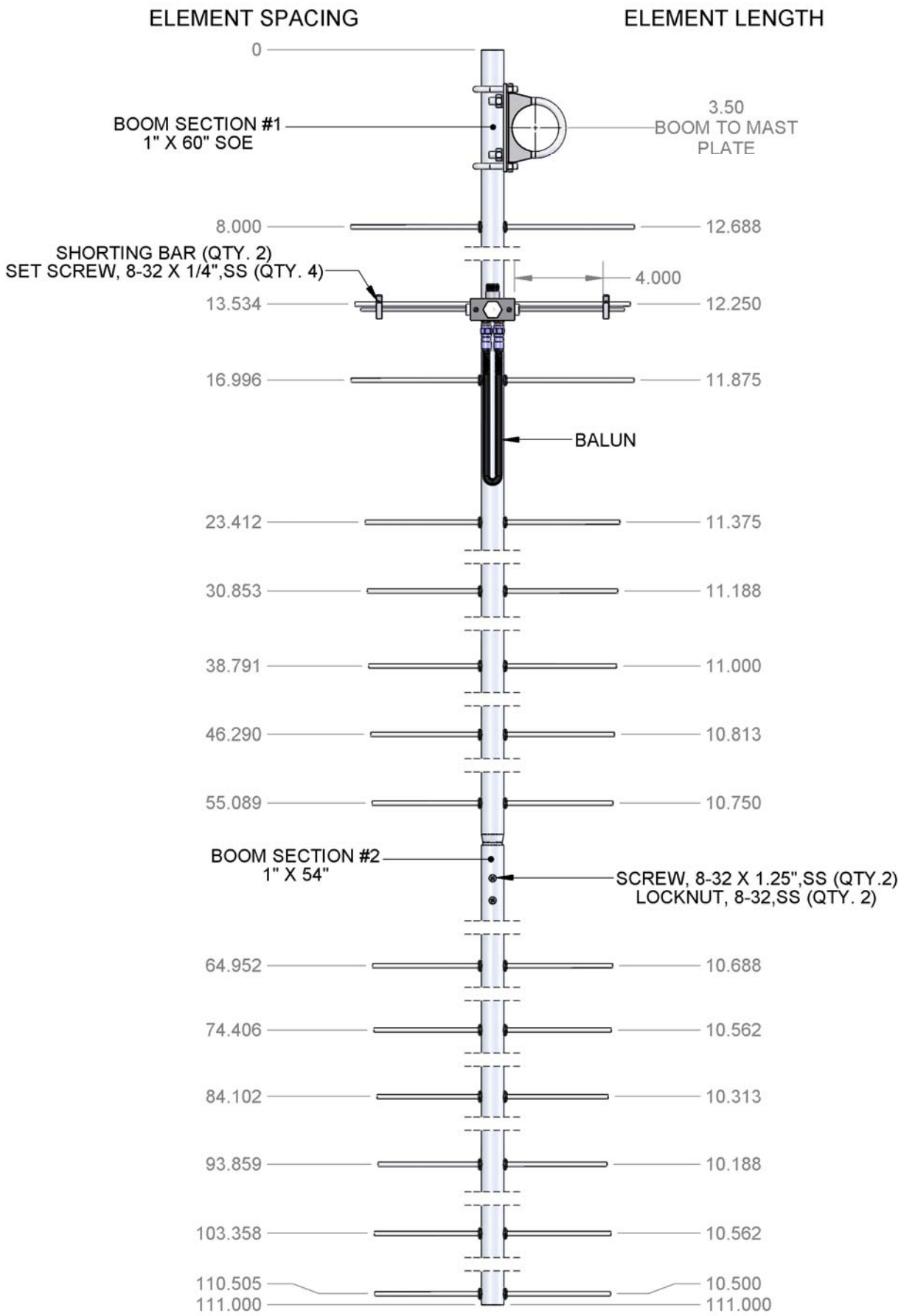
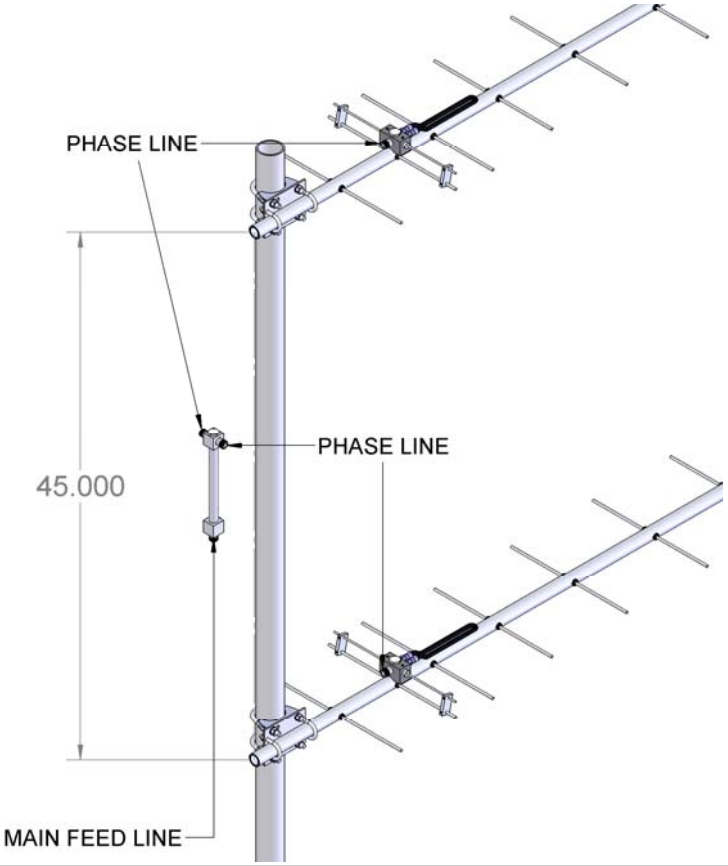
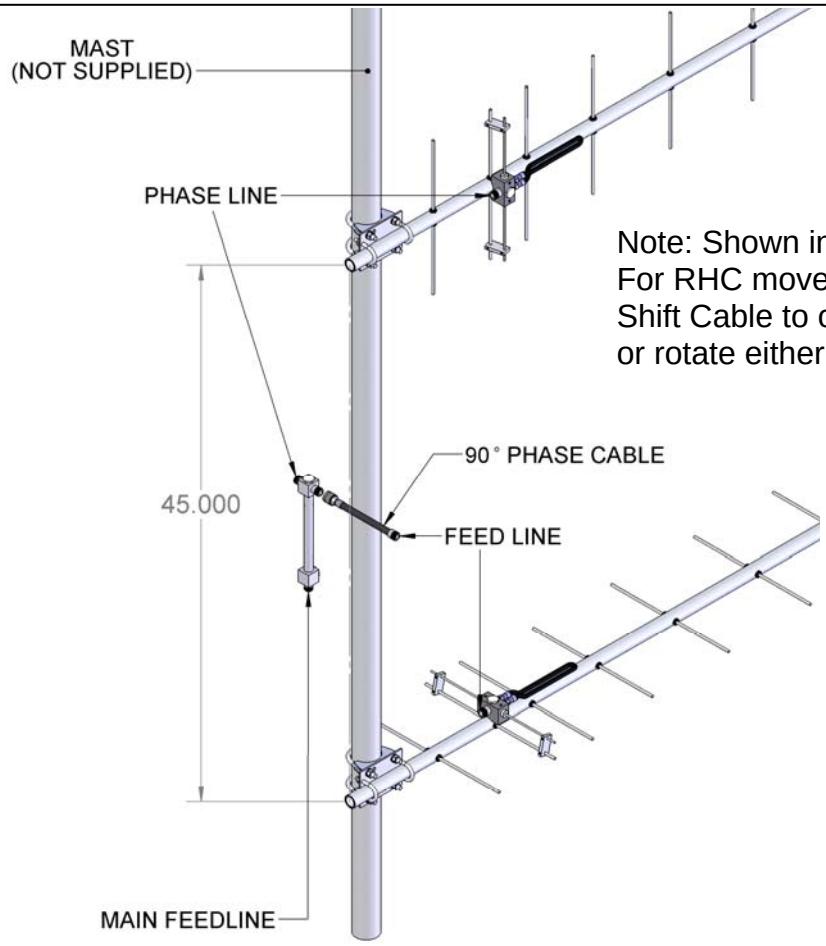
456-14RM DIMENSION SHEET



456-14RM SYSTEM LAYOUTS





Note: Shown in LHC.
For RHC move 90° Phase Shift Cable to opposite cable or rotate either antenna 180°.

456-14RM PARTS & HARDWARE

DESCRIPTION	QTY
BOOM SECTION, 1 X .058 X 60” SOE	1
BOOM SECTION, 1 X .058 X 54”	1
BOOM SLEEVE, 7/8 X .058 X 18”	1
ELEMENTS, 3/16 ROD x Dimension Sheet	14
DRIVEN ELEMENT BLOCK	1
BALUN, RG-6 1/2 WAVE	1
BOOM-TO-MAST PLATE, .125 X 3” X 4”	1
U-BOLT AND CRADLE, 2”	2
U-BOLT AND CRADLE, 1”	2
ASSEMBLY MANUAL	1

IN HARDWARE BAG:

SHORTING BAR	2
BUTTON INSULATORS	30
KEEPER, SS	30
NUT, 5/16-18 SS	4
LOCKWASHER, 5/16 SS	4
NUT, 1/4-20 SS	4
LOCKWASHERS, 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
SEAL NUTS, 3/8-32	2
ALLEN HEAD WRENCH, 5/64”	1
PUSH TUBE, 3/8 X 3”	1

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