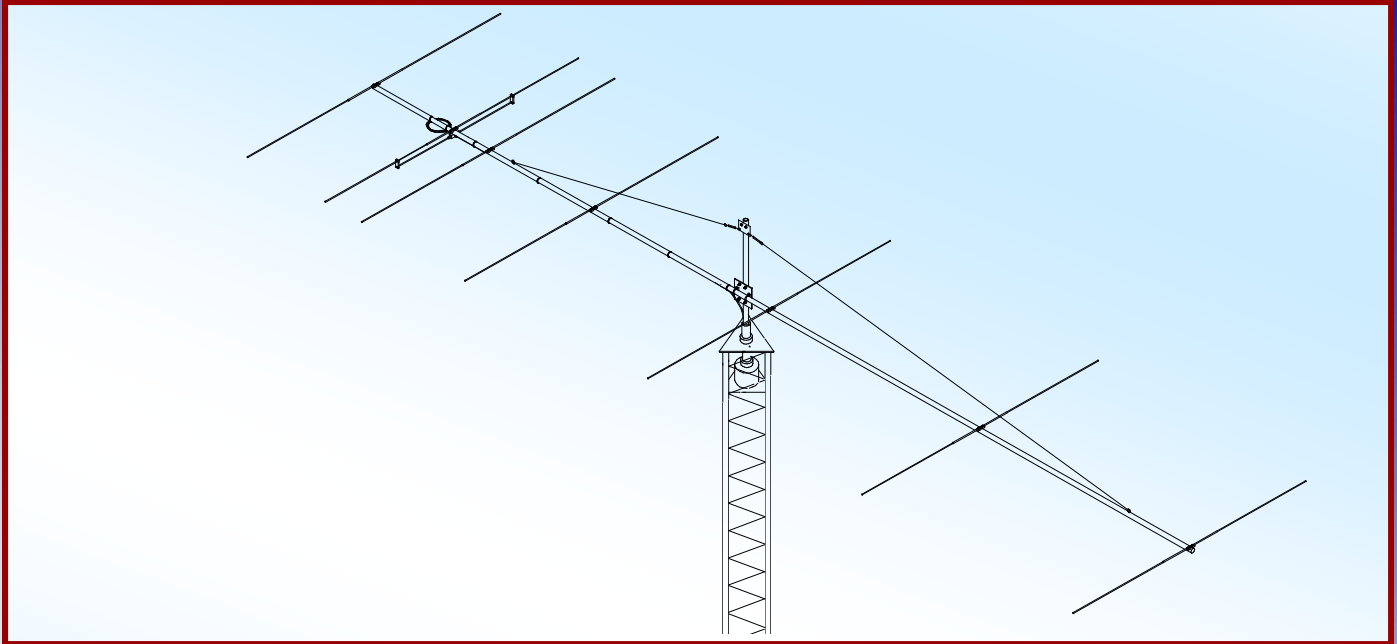




M2 Antenna Systems, Inc. Model No: 48.5-7



SPECIFICATIONS:

Model	48.5-7	Boom Length / Dia.....	26' 5" / 2-1/2"-2"
Frequency Range.....	47.9 To 48.9 MHz	Maximum Element Length.....	12' 6"
*Gain	12.49 dBi	Turning Radius:	Call
Front to back	19 dB Typical	Stacking Distance.....	Call
Feed type	"T" Match	Mounting.....	1-1/2" to 2" Nom.
Feed Impedance	50 Ohms Unbalanced	Wind area / Survival	3.1 Sq. Ft. / 100 MPH
Maximum VSWR.....	1.5:1 Typical	Weight / Ship Wt.....	30 Lbs. / 38 Lbs.
Input Connector.....	"N" Female		
Power Handling.....	1.5 kW		

***Subtract 2.14 from dBi for dBd**

FEATURES:

The 48.5-7 has been computer optimized from the ground up for gain and pattern covering 47.9 to 48.9 MHz. The original design was for Meteor Scatter, but can be used for monitoring systems. The custom 1:1 Fairite balun and low loss hairpin match help maintain high efficiency. Element ring clamps and other important components are CNC machined for maximum strength and electrical integrity. All antenna hardware is stainless steel and the U-bolts for mounting are Zinc plated.

48.5-7 ASSEMBLY MANUAL

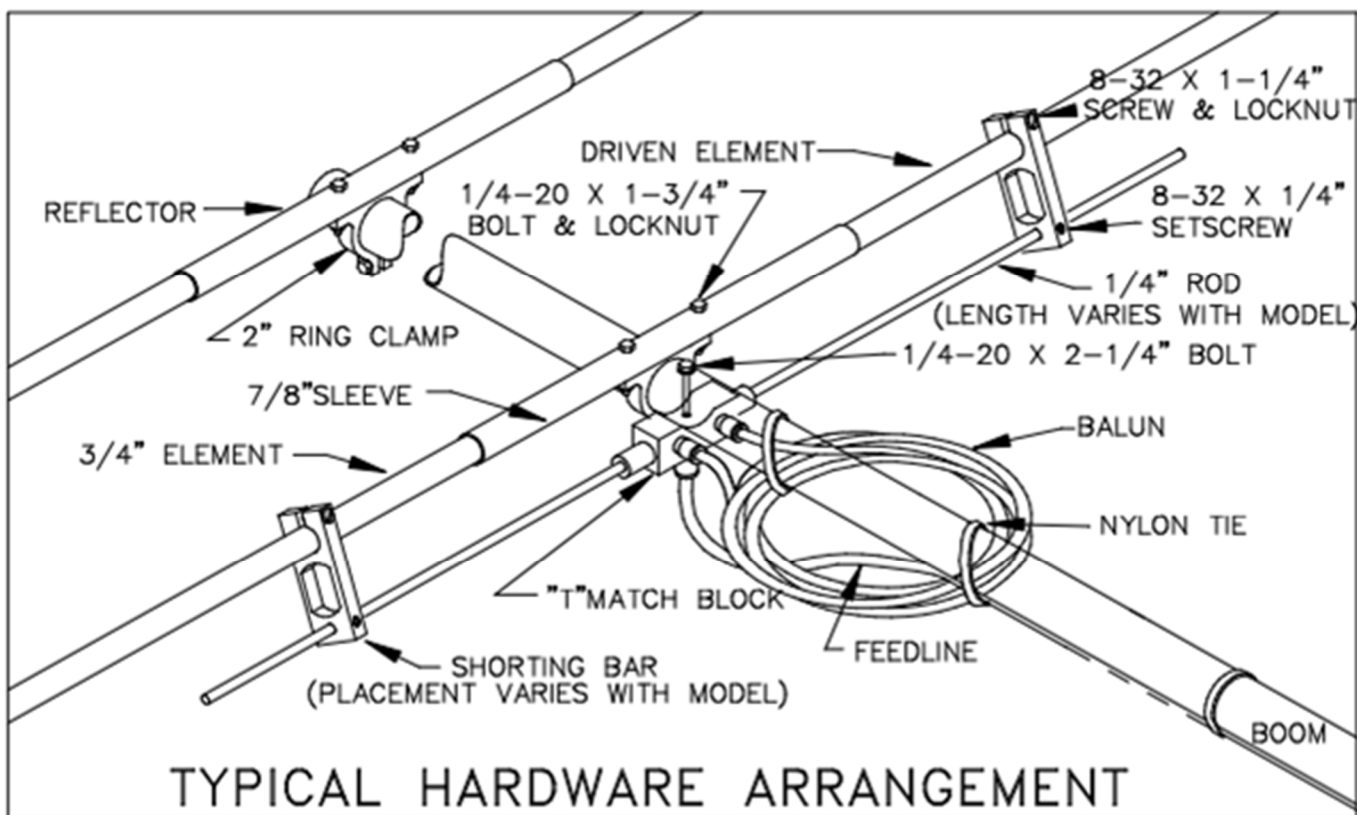
Note: A cup of zinc paste (PENETROX, NOALOX, or equivalent) has been provided to enhance the quality of the electrical joints in this antenna. Apply a thin coat wherever two pieces of aluminum come in contact.

1. Refer to Dimension Sheet. Note the different boom sections and the approximate position of each element. Slide the 2" and 2-1/2" RING CLAMPS into their approximate positions on the appropriate boom sections. For example, the rear boom section, 2" x 30", has two 2" ring clamps, one located roughly at 1" from the rear end (with no boom assembly holes) and one about 6" from the front (drilled) end. Note this section also has a 1/4" hole (for "t" match block) and a 5/16" hole for an eyebolt. Accuracy is unnecessary; the boom must be assembled for exact settings. Spread the ring clamp fingers with a flat blade screwdriver to ease movement on boom. Loosely add a 1/4-20 x 1" bolt and locknut to fingers of all clamps.

2. Return to the rear boom section. Mount the "T" MATCH ASSEMBLY CLOCK to the 1/4" hole 5-13/16" from the front, drilled end. Use a single 1/4-20 x 2-1/4" bolt. Make sure the Driven Element ring clamp is the rear of the "T" match block. Now slide the ring clamp up against the "T" match block and rotate until the element channel is on the opposite side of the boom from the "T" match block. Tighten the 1/4-20 x 1" bolt and locknut to hold the clamp in position.

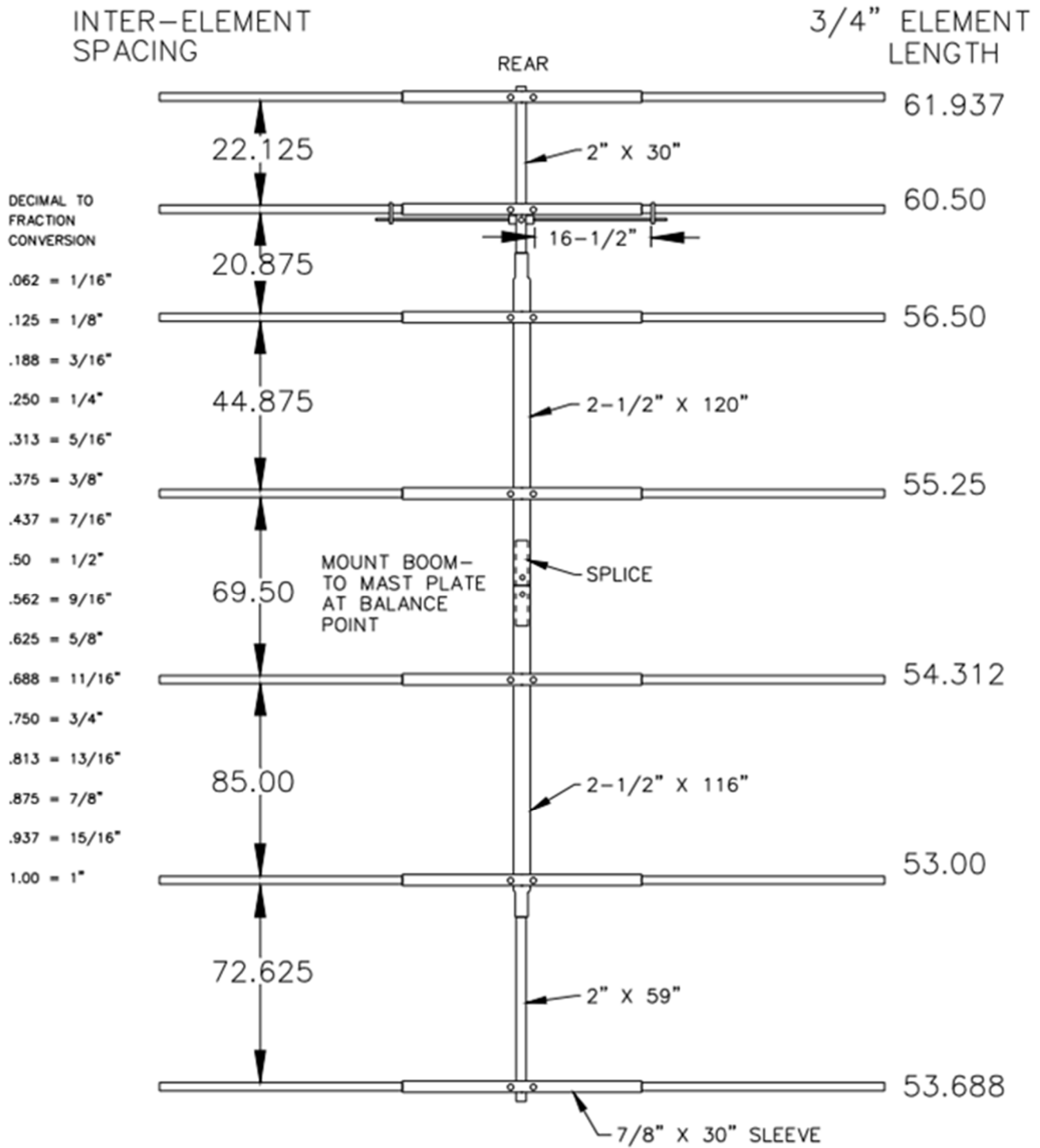
3. Sort the seven 7/8" x 30" CENTER SPLICE sections: three are drilled with holes 3-3/8" apart for the 2" ring clamps / four are drilled with holes 4-1/2" apart for the 2-1/2" ring clamp.

4. Select the two 3/4" x 60-1/2" ELEMENT SECTIONS (length specified on the Dimension Sheet for the driven element) and slide a 4-3/8" long SHORTING BAR onto each one. Position them roughly in the middle of the tubing. Slide the butt end (with hole) of each 3/4" ELEMENT SECTION halfway into a 7/8" x 30" CENTER SLEEVE FOR 2" CLAMP and line up holes. Slide a 1/4-20 x 1-3/4" bolt through each hole and place this assembly into the Driven Element ring clamp channel. Add the 1/4" locknuts and tighten.



48.5-7 DIMENSION SHEET

DIMENSION SHEET



48.5-7 ASSEMBLY MANUAL

5. Add the 8-32 x 1-1/4" screw and locknut and the two 8-32 x 1/4" set screws to each SHORTING BAR. Slide the shorting bars down onto the 1/4" "T" Match rods and position them according to the Dimension Sheet: 16-1/2" from the outer face of the "T" match block to the inner face of the shorting bar. Align the rods parallel with the element sections and tighten the hardware. A 5/64" Allen wrench has been provided for the set screws.
6. Now assemble all the boom sections. A 2-3/8" SPLICE SECTION joins the straight ends of the two 2-1/2" boom sections. Secure with four 1/4-20 x 4" bolts and locknuts. Orient the 120" section to the rear. Assemble the 2" x 30" section (with driven element) to the rear 2-1/2" section with 1/4-20 x 2-1/2" bolts and locknuts. Assemble the 2" x 59" section to the front 2-1/2" section. Install the 5/16" x 4" Eyebolts into 11/32" holes in the rear and front 2" boom sections.
7. Pair up the remaining 3/4" element sections and 7/8" x 30" sleeves and mount to the ring clamps as in step #4, following the Dimension Sheet for length.
8. Now adjust ELEMENT SPACING following the Dimension Sheet. Since the Driven Element is fixed, use it as the primary measurement reference. Dimensions given are "center to center" but can also be used with a measuring tape, hooked and measured "edge to edge". After setting spacing, align elements with the Driven Element and tighten the 1/4-20 x 1" bolts.
9. Attach the balun to the two connectors on the "T" match block. Secure balun coil to boom with two cable ties. If the feed point will be inaccessible after installation it may prove convenient at this time to install a feedline section forward to the balance point. Secure with the nylon ties supplied (ties should be snug, but not crushing cable). Seal feed and balun connectors with black tape, coax seal or equivalent.
10. Pick up the boom and mark the balance point. Center the BOOM TO MAST PLATE here, 8" length horizontal and secure with two 2-1/2" U-bolts, cradles, stainless lockwashers and nuts. Two 2" U-bolts are supplied for attaching the antenna to the mast.
11. To prepare the overhead guy system, begin by temporarily installing a 2" U-bolt through the TURNBUCKLE PLATE and into the top set of 2" U-bolt holes on the boom to mast plate. Add a couple of 5/16" nuts to hold in place. Unscrew turnbuckle eyes / hooks until only a thread or two shows inside the turnbuckle body and hook to turnbuckle plate.
12. Uncoil DACRON ROPE. Secure one end to rear eyebolt, taking two turns through the eyebolt, then adding three TIGHT half-hitches. Pull hard on cord to set the knots. Repeat for the front eyebolt. Seal cord ends with heat (lighter, propane torch, etc) and tape to main length.
13. Equalize cord length at turnbuckle plate and cut. Put two turns through rear turnbuckle eye, pull slack out of rope and three TIGHT half-hitches. Repeat for front cord section. Seal and tape cord ends.
14. Both cords should now be fairly taut and parallel with boom. Disconnect the 2" U-bolt hold the turnbuckle plate and lift it up until the boom bows up slightly. This is approximately how high the plate will need to be mounted on the mast when the antenna is installed.
15. During final installation on the tower / mast, secure the turnbuckle plate at the appropriate height with the 2" U-bolt. Then lean or pull on the cords to increase the tension and help the knots take their final "set". Make sure the knots are not slipping. When the guy system has taken a "set", loosen the 2" U-bolt and adjust turnbuckle plate height until the boom is straight and level. Finer adjustments can be made at any time, if necessary, with the turnbuckles.
16. This completes the ASSEMBLY. When the antenna is installed in position on the mast, the main feedline can be attached and sealed at that time. REMEMBER to support the feedline at the antenna boom and on the mast. Leave an adequate feedline loop for rotation around the tower. Mount horizontally polarized VHF and UHF antennas at least 40" above or below this antenna to minimize interaction.

Carefully Manufactured By

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48.5-7 PARTS & HARDWARE

DESCRIPTION	QTY
BOOM SECTION, 2" X .058 X 30" STR	1
BOOM SECTION, 2" X .058" X 59" STR.....	1
BOOM SECTION, 2.5" X .065 X 120" STR	1
BOOM SECTION, 2.5" X .065 X 116" STR	1
BOOM SLICE, 2.375"	1
ELEMENT SECTION, 3/4" SEE DIMENSION SHEET	14
ELEMENT SLEEVE, 7/8" X .058 X 30" (FOR 2" RING CLAMP).....	3
ELEMENT SLEEVE, 7/8" X .058 X 30" (FOR 2-1/2" RING CLAMP)	4
BOOM TO MAST PLATE, .250" X 4" X 6".....	1
DRIVEN ELEMENT ASSEMBLY	1
BALUN, RG-6.....	1
RING CLAMP, 2"	3
RING CLAMP, 2-1/2".....	4
DACRON ROPE, 5/16" X 24'	1
EYEBOLTS, 5/16" X 4".....	2
U-BOLT AND CRADLE, 2-1/2".....	2
U-BOLT AND CRADLE, 2".....	3
ASSEMBLY INSTRUCTIONS	1
 IN HARDWARE BAG	
SHORTING BARS, 1/4" X 3/4"	2
TURNBUCKLE PLATE, .188" X 2" X 5"	1
TURNBUCKLE, 5/16" SS	2
EYEBOLTS, 5/16" X 4" SS.....	2
NUT, 5/16-18 SS	12
LOCKWASHER, 5/16" SS.....	12
BOLT, 1/4-20 X 3" SS	4
BOLT, 1/4-20 X 2-1/2" SS	4
BOLT, 1/4-20 X 2-1/4" SS	1
BOLT, 1/4-20 X 1-3/4" SS	14
BOLT, 1/4-20 X 1" SS	7
NYLOCK NUT, 1/4-20 SS	29
SET SCREW, 8-32 X 1/4" SS	4
SCREW, 8-32 X 1-1/4" SS	2
LOCKNUT, 8-32 SS	2
NYLON TIE, 11"	5
NUT SEAL.....	2
ZINC PASTE, 1 OZ	1

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