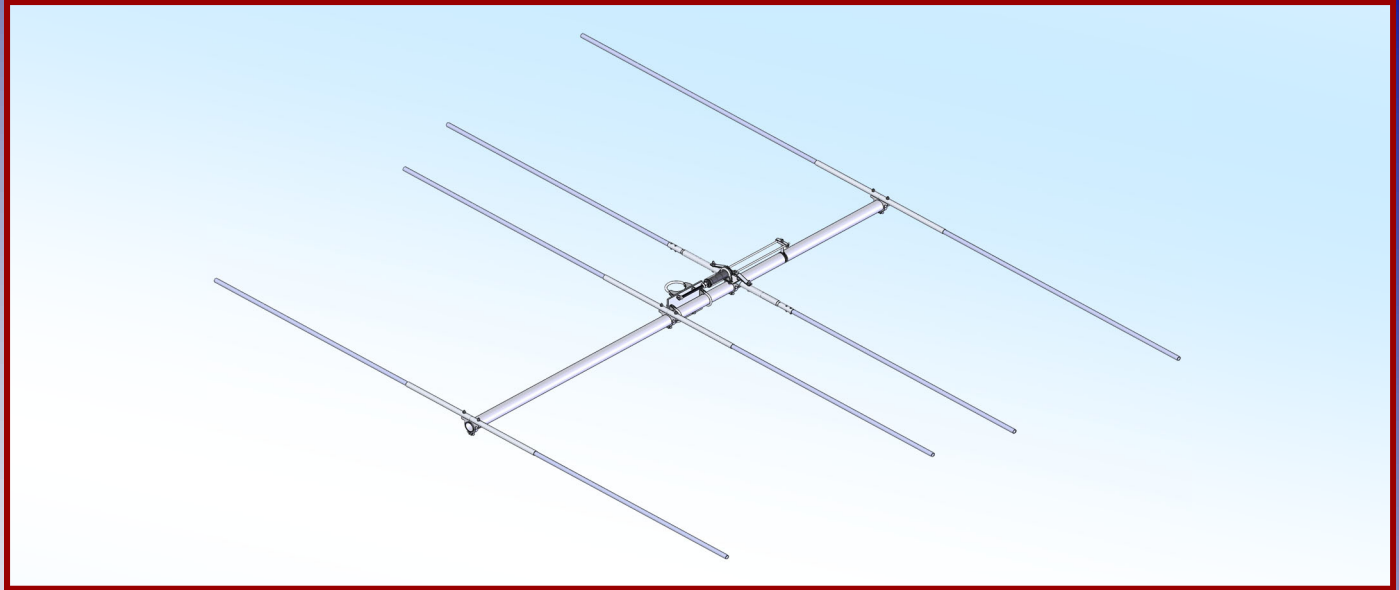




M2 Antenna Systems, Inc. Model No: 48.5-4



SPECIFICATIONS:

Model	48.5-4	Power Handling	1.5 kW
Frequency Range	48.3 to 48.7 MHz	Boom Length / Dia	151" / 2"
Gain	10.39 dBi	Element Length / Dia	143" / 7/8" - 1/2"
Front to back	24 dB Typical	Turning Radius:	Call
Feed type	Hair Pin Match	Stacking Distance	Call
Feed Impedance	50 Ohms Unbalanced	Mast Size	2" to 3" Nom.
Maximum VSWR	1.5:1 Typical	Wind area / Survival	2.1 Sq. Ft. / 100 MPH
Input Connector	"N" Connector	Weight / Ship Wt.	40 Lbs. / 45 Lbs.

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

FEATURES:

The 48.5-4 has been computer optimized from the ground up for gain and pattern covering 48.3-48.7 MHz. Originally designed for Meteor Scatter and 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.

M2 antenna Systems, Inc., has well over 35 designs for Meteor Scatter applications covering from 39 MHz to 50 MHz. If you have a specific requirement, please contact us for more details.

M2 Antenna Systems, Inc. 4402 N. Selland Ave. Fresno, CA 93722

Tel: (559) 432-8873 Fax: (559) 432-3059 Web: www.m2inc.com

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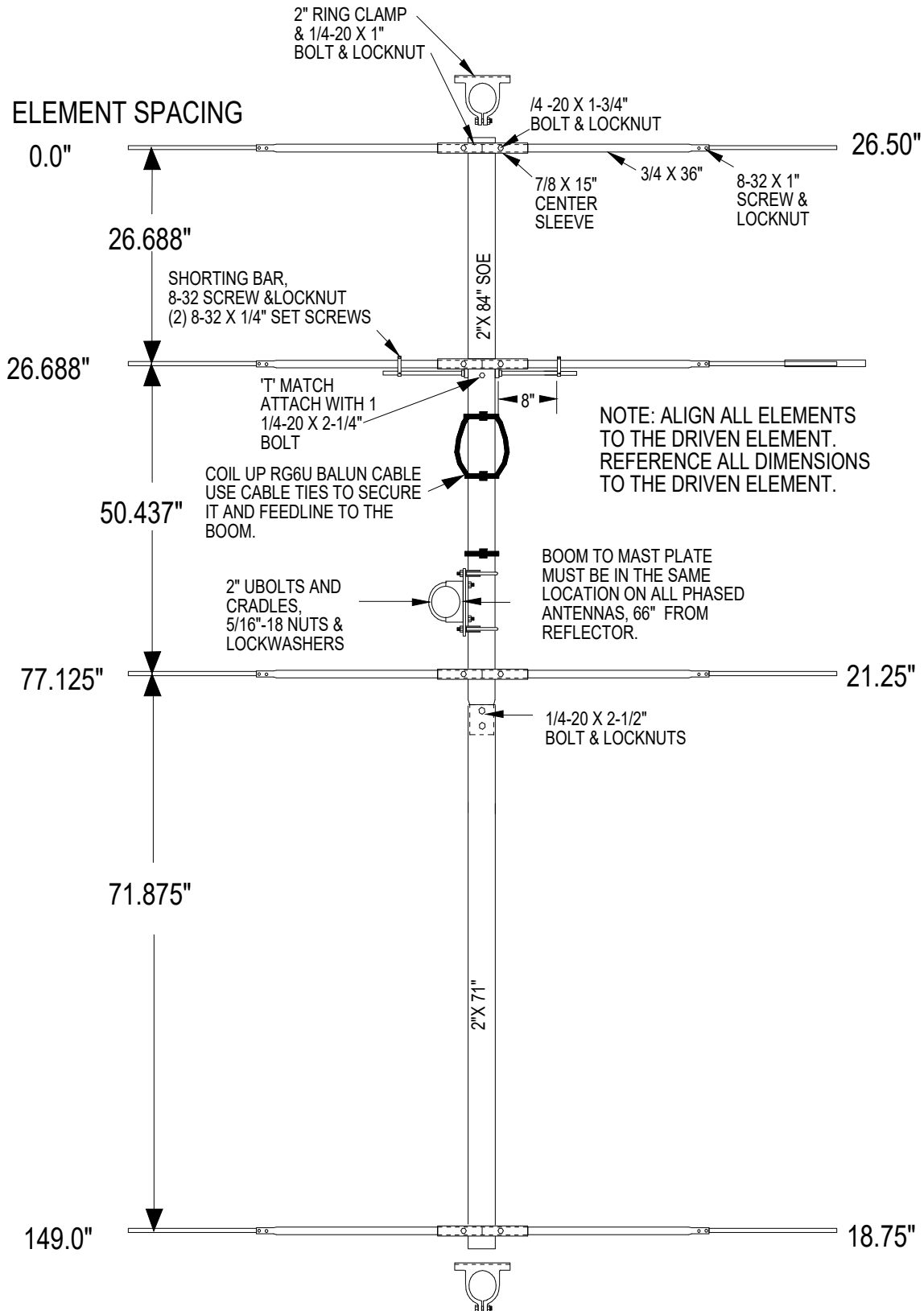
08/30/22
Rev.01

48.5-4 ASSEMBLY MANUAL

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

1. Refer to the Dimension Sheet. Note the different boom sections and the approximate position of each element. Slide the 2" RING CLAMP into their approximate positions on the boom sections. Note One section also has a 1/4" hole (for "T" match block) and ALL SPACING DIMENSIONS ARE REFERENCE FROM THE DRIVEN ELEMENT. Accuracy at this point is unnecessary as the boom must be assembled before exact element spacing is set. Spread the ring clamp fingers with a flat blade screwdriver if necessary 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 BLOCK to the 1/4" hole with a single 1/4-20 x 2-1/4" bolt (make sure the Driven Element ring clamp is to the rear of the "T" match block). Orient the two balun connectors to the front. 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. Select a 7/8" x 15" CENTER SPLICE and insert a 3/4" x 36" tube section halfway into butt end. Line up holes. Push a 1/4-20 x 1-3/4" bolt through this hole and add the second 3/4" element section. Add another bolt and place this assembly into the Driven Element ring clamp channel. Add the 1/4" locknuts and tighten.
4. Slide the SHORTING BARS onto the swaged outer ends of the 3/4" sections and onto the 1/4" "T" Match rods. Position them per the DIMENSION SHEET. The measurement is between the outer face of the "T" Match block and the inner face of the shorting bar. Wipe PENETROX on the element and "T" Match rod at the correct spot. Slide the shorting bar to this spot. Add the 8-32 x 1-1/2" screw and locknut and ALIGN the rods parallel with the element sections and tighten the hardware. Wet the two 8-32 x 1/4" set screws with Penetrox and thread a pair into each shorting bar. A 5/64 Allen wrench has been provided for tightening the set screws.
5. Now assemble the boom sections using the 1/4-20 x 2-1/2" bolts and locknuts. Install the BOOM TO MAST PLATE at about 66" from the rear at this time. This plate can be clamped in a vice, turned flat and laid on a work table or clamped to a short mast providing a good working height for the balance of the assembly.
6. Assemble the remaining 3/4" element sections and 7/8" x 15" sleeves and mount to the ring clamps as in step #3.
7. Pair up the 1/2" tip sections by length. Install the longest pair into the REFLECTOR (rear) element. NOTE: If you have received tips with no holes predrilled at the factory, position the 1/2" tip at the proper dimension and drill through the holes into the 1/2" tube using a #17 (.173 dia.) drill bit. Secure with 8-32 x 1" screws and locknuts. Repeat for all elements, using the shorter lengths forward. See the Dimension Sheet for EXPOSED TIP LENGTHS.
8. Now adjust ELEMENT SPACING ACCURATELY 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 for edge to similar edge measurement. After setting spacing, align elements parallel with the Driven Element and tighten the 1/4-20 x 1" bolts in each ring clamp.
9. Install the "F" connector SEAL NUTS on the two female "F" connectors on the "T" match block. The black neoprene seal should face out. Attach the balun to the two "F" connectors on the "T" match block. Finger tighten and then gently final tighten with a 7/16" end wrench. Then run the SEAL NUTS up against the face of the male connectors and tighten gently about 1 turn with a 1/2" end wrench. Attach the coaxial PHASING LINE "N" connector to the "T" match block and route the coax forward to the boom to mast plate. Secure the main feed line and the coiled balun cable as required with large black cable ties or equivalent. (ties should be snug, but not crushing cable). It is your option to further seal the "N" feed connector and balun connectors with Coax Seal or equivalent. NOTE; The balun cable does not have to be coiled up to be effective. It can be uncoiled and secured cleanly along the boom if desired.

48.5-4 DIMENSION SHEET



48.5-4 ASSEMBLY MANUAL

10. Mount the BOOM TO MAST PLATE as shown on the DIMENSION SHEET and secure with two 2" U-bolts, cradles, stainless lockwashers and nuts. Two 2" U-Bolts and hardware are supplied for attaching the antenna to the mast.

11. 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 or tower.

Carefully Manufactured By
M2 Antenna Systems, Inc.
4402 N. Selland Ave.
Fresno, CA 93722
(559) 432-8873 Fax (559) 432-3059
www.m2inc.com email: sales@m2inc.com

48.5-4 PARTS & HARDWARE

DESCRIPTION	QTY
BOOM SECTION, 2" X .058 X 84" SOE.....	1
BOOM SECTION, 2" X .058 X 71" STR.....	1
ELEMENT SECTION, 3/4" X .049 X 36" SOE.....	8
ELEMENT TIP, 1/2" X .049 X SEE DIMENSION SHEET.....	8
ELEMENT SPLICE, 7/8" X .058 X 15" (FOR 2" RING CLAMP).....	4
BOOM TO MAST PLATE, .250" X 6" X 8".....	1
DRIVEN ELEMENT ASSEMBLY.....	1
BALUN, RG-6.....	1
RING CLAMP, 2".....	4
U-BOLT AND CRADLE, 2".....	4
ASSEMBLY INSTRUCTIONS.....	1
 IN HARDWARE BAG	
SHORTING BARS.....	2
NUT, 5/16-18 SS.....	8
LOCKWASHER, 5/16 SPLIT RING.....	8
BOLT, 1/4-20 X 2-1/2" SS.....	2
BOLT, 1/4-20 X 2-1/4" SS.....	1
BOLT, 1/4-20 X 1-3/4" SS.....	8
BOLT, 1/4-20 X 1" SS.....	4
NYLOCK NUT, 1/4-20 SS.....	14
SCREW, 8-32 X 1-1/2" SS.....	2
SCREW, 8-32 X 1" SS.....	16
SET SCREW, 8-32 X 1/4" SS.....	4
NYLOCK NUT, 8-32 SS.....	18
NUT SEAL, 3/8-32.....	2
NYLON TIE, 14".....	3
ZINCE PAST, 1 OZ.....	1
ALLEN WRENCH, 5/64.....	1

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