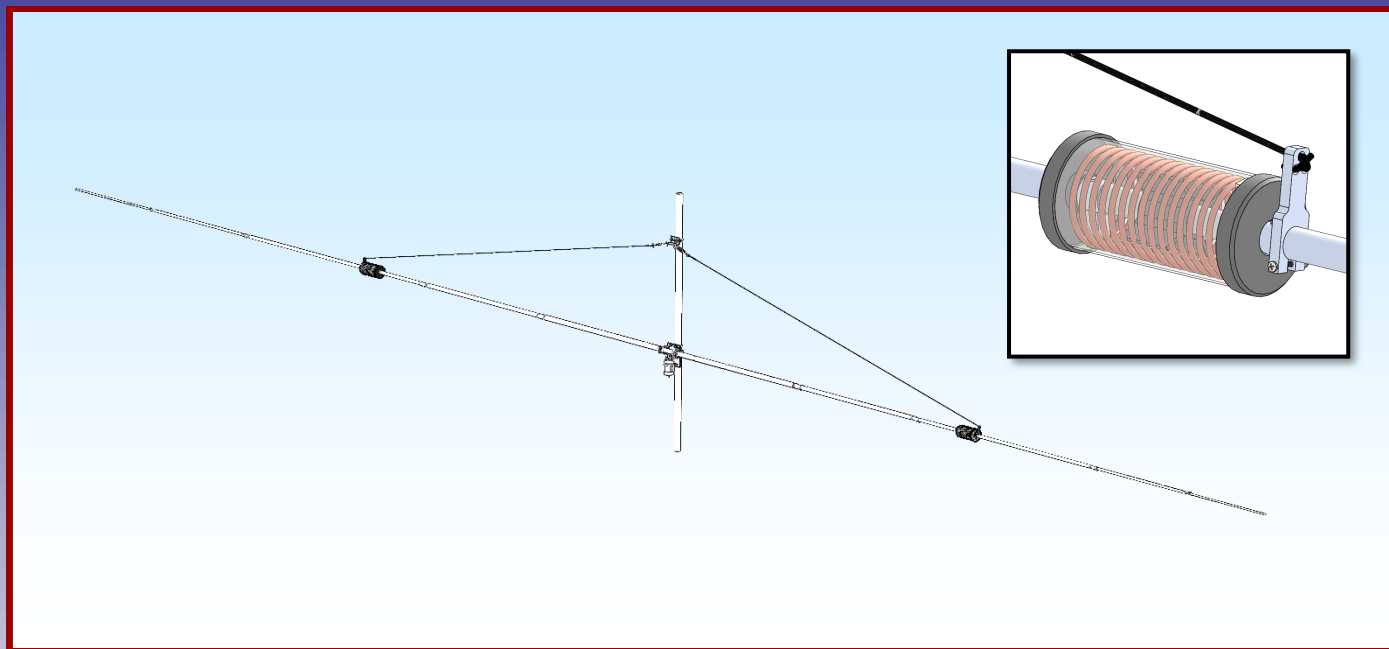




# M2 Antenna Systems, Inc.

## Model No: 40M1C



### SPECIFICATIONS:

Model .....40M1C  
 Frequency Range (TUNABLE) ..7.0 — 7.3 MHZ  
 \*Gain, (FS) / Over gnd .....1.9 dBi\*  
 Front to back .....7.3 @ 70'  
 Beamwidth .....E=83°  
 Feed type / Balun .....1:1 Balun opt.\*\*  
 Feed Impedance. ....50 Ohms  
 Maximum VSWR.....2.0:1 @ 150 KHZ BW

Power Handling .....1500 W  
 Boom Length / Dia.....N/A  
 Maximum Element Length.....50'  
 Turning Radius: .....25'  
 Mast Size .....2" or 3" Nom.  
 Wind area / Survival .....100 MPH  
 Weight / Ship Wt.....23 Lbs. / 2 Lbs.

\*Subtract 2.14 from dBi for dBd / FS = Free Space \*\*1:1 Balun Opt: Power Handling / Connector

### FEATURES:

The new 40M1C is a new exciting antenna. M<sup>2</sup> engineers developed a new coil using 3/16" copper wire with an aluminum core. The result is a lightweight inductor with great power handling and a Q near 1000. The coil has a weather cover made from polyethylene protecting the coil from birds, weather and snow build up. This allows for an almost lossless REDUCED SIZE element. Countless hours have been spent optimizing all of our 40 meter antennas using this new coil technique. The 40M1C uses simple element tip adjustments for optimizing performance for any part of the 40M band in 150 kHz steps. The 40M1C uses all of the same high quality hardware and machine parts that all of customers have come to know. Don't miss the best part of the cycle, contact M2 for some help today.

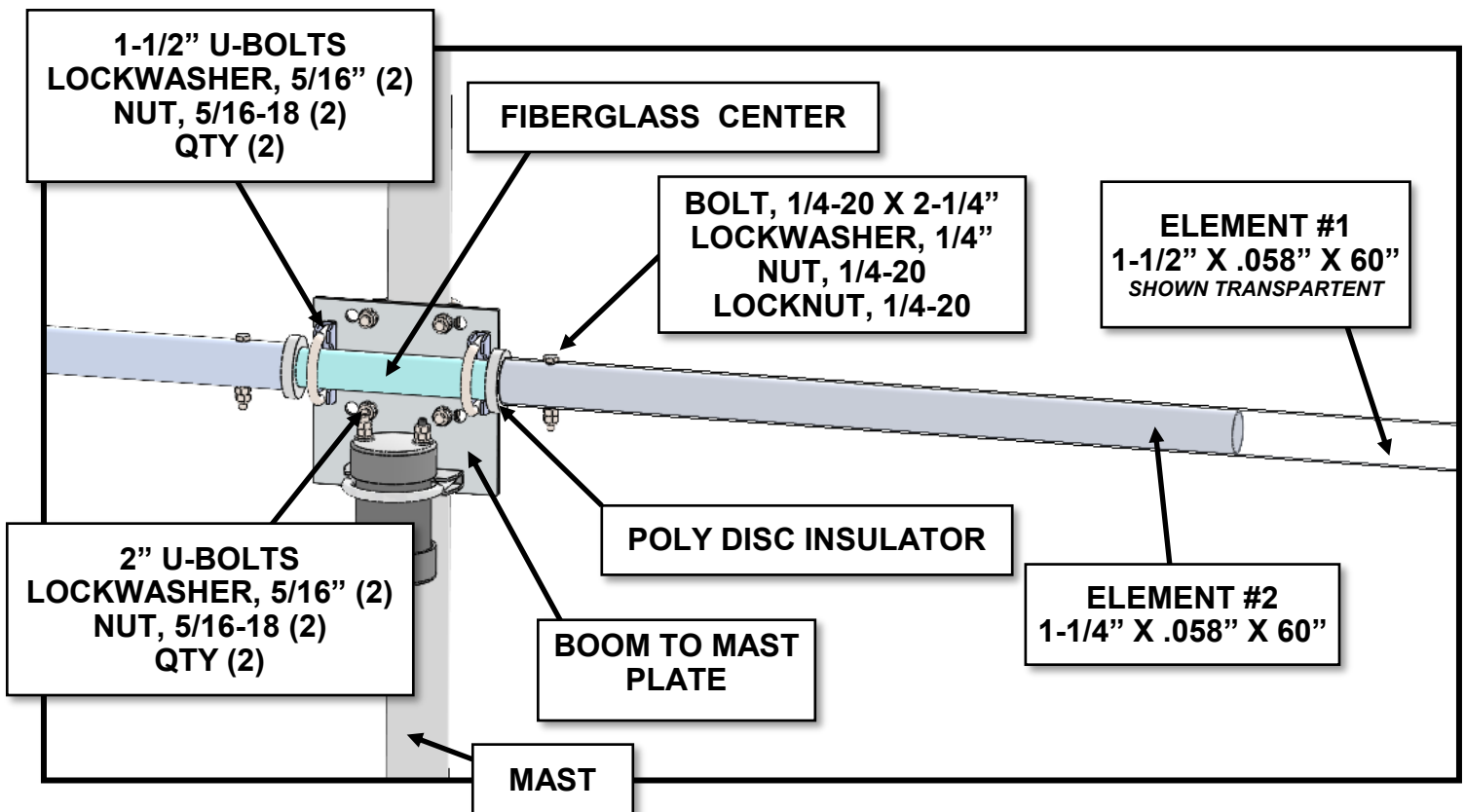
# 40M1C ELEMENT ASSEMBLY

**BEFORE YOU BEGIN:** Look over all the DRAWINGS to get familiar with the various parts and assemblies in the system. Tools handy for assembly process: screwdriver, 11/32, 7/16, 1/2, 9/16 and 5/8" spin-tites, end wrenches and/or sockets, measuring tape.

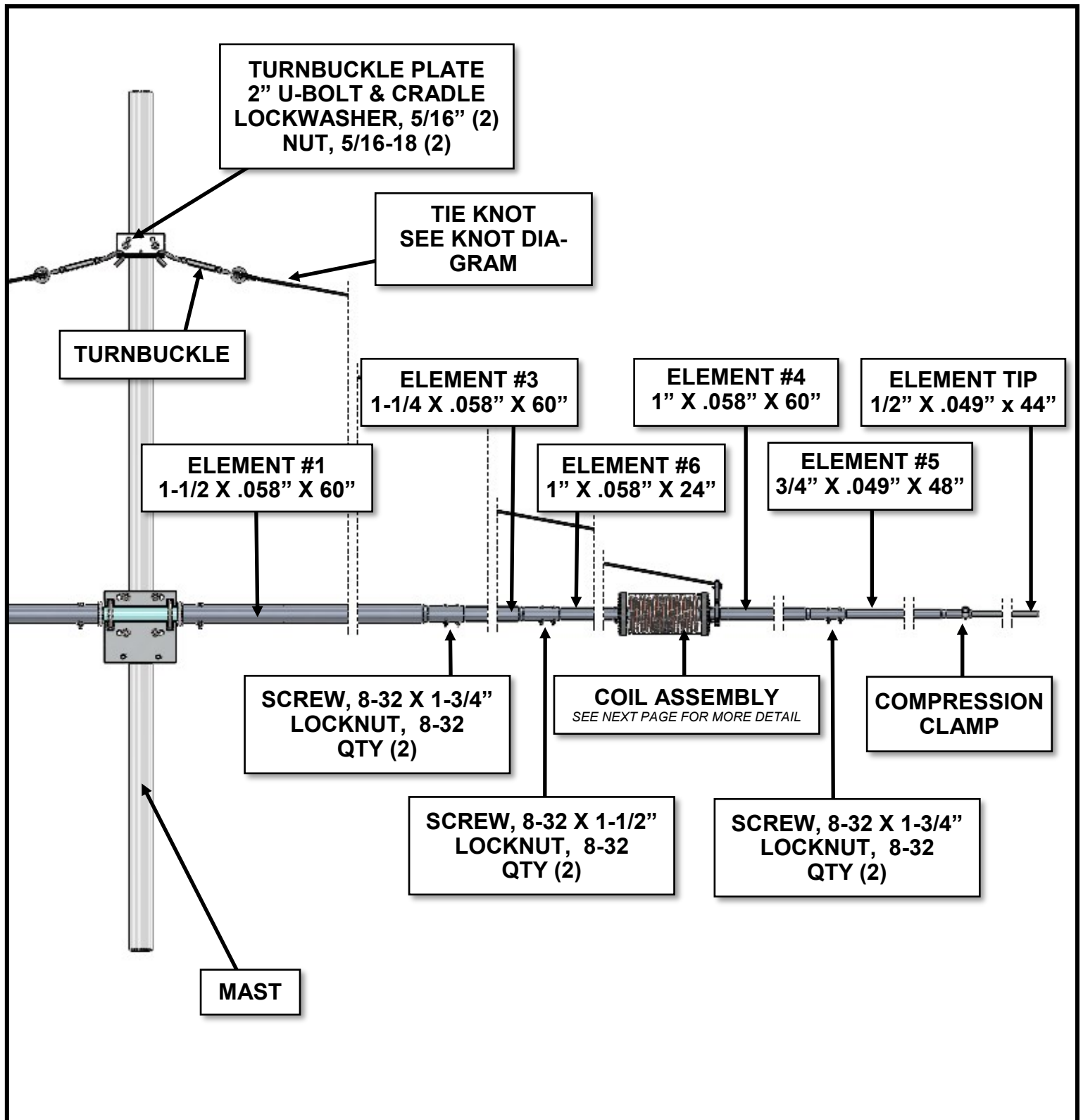
**Note:**

All installations are unique in some way, which means it's OK to preassemble certain hardware, or rearrange the assembly process to meet specific site requirements. A quick review of the assembly drawings should help firm up the appropriate strategy. Please remember to double-check all hardware for tightness **BEFORE** it becomes inaccessible.

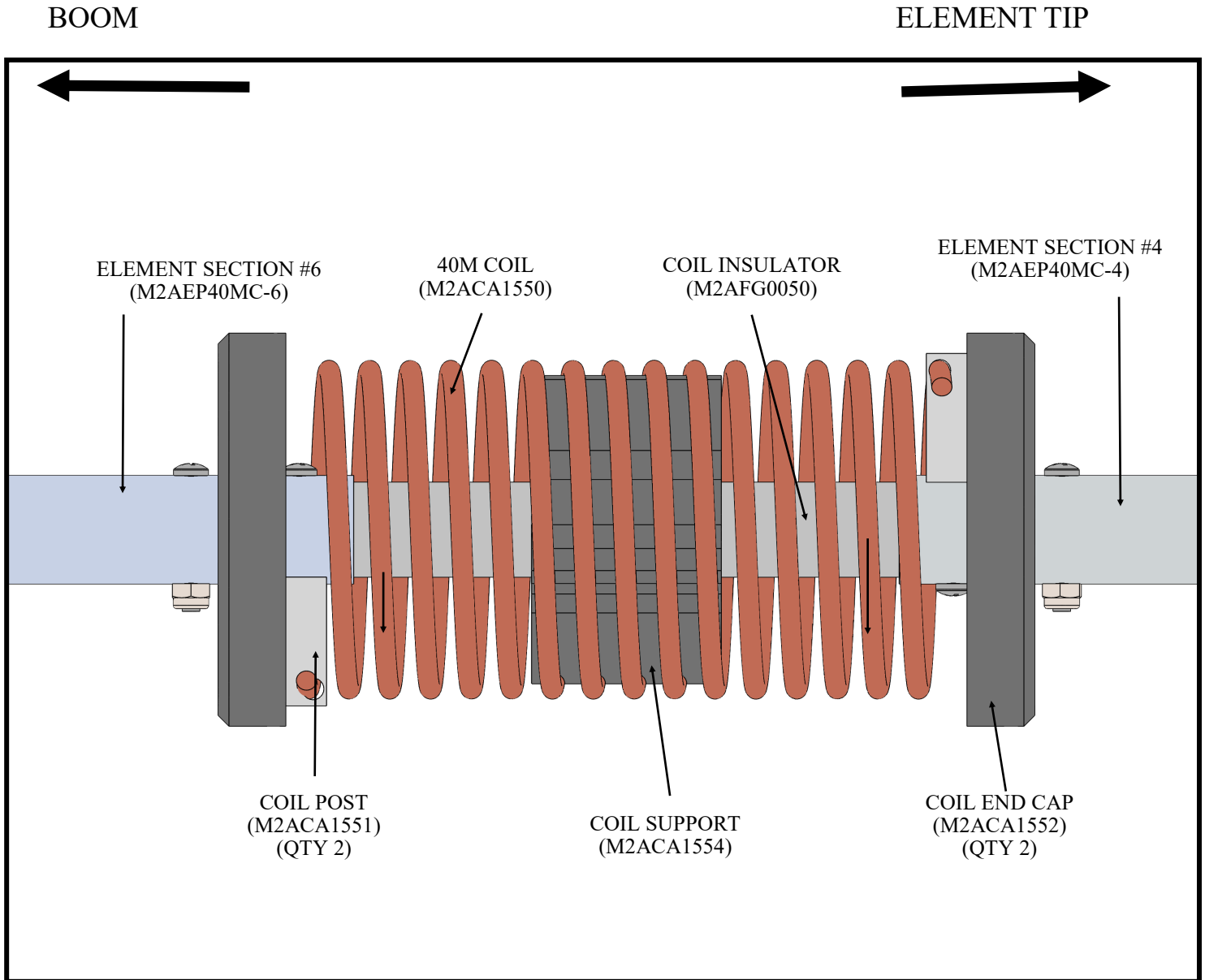
***A container of Zinc paste (Penetrox, Noalox, or equiv.) has been provided to enhance and maintain the quality of all mechanical and electrical junctions on this system. Apply a thin coat wherever two pieces of aluminum come in contact or any other electrical connections are made. It is also useful on screws and bolt threads as an ANTI SEIZE compound.***



# 40M1C ELEMENT ASSEMBLY



# 40M1C COIL ASSEMBLY



# 40M1C COIL ASSEMBLY

## **STEP 1:**

The coil comes wound tight with 16 total turns from the factory. The excess material will be trimmed off after the coil is in its final position. Using a permanent marker, draw a straight line from one end of the coil to the other. This will help later to determine if your coil has grown in diameter during assembly. After final positioning of the coil no more 3/4 of an inch of line tilt is allowed. A larger coil will cause the inductance to change which can cause your antenna to be off frequency.

## **STEP 2:**

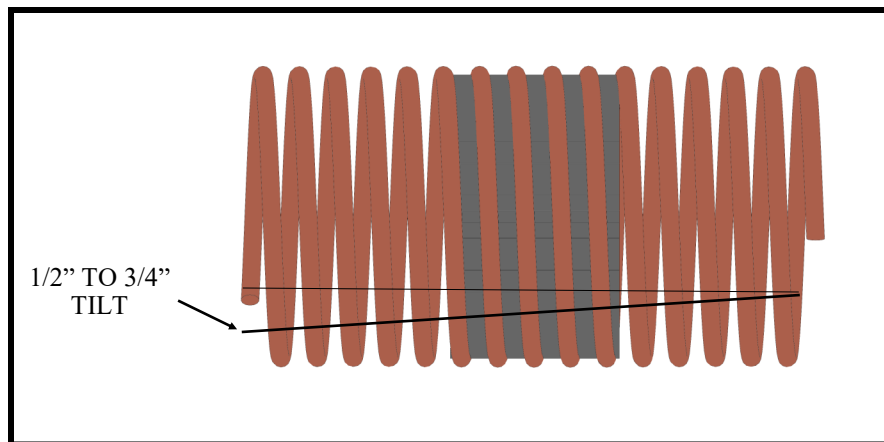
The COIL is wound tight at the factory to prevent damage during shipping. Use the COIL SPREADING TOOL provided and carefully insert it into the first turn of the COIL. Now gently push or roll the tool through all 16 turns of the COIL. Now the COIL is nearly in its final shape and is ready to be threaded onto the COIL SUPPORT. Note the reference line drawn earlier, it will have a slight tilt after spreading.

## **STEP 3:**

On one end, use pliers to gently straighten the last 1/2" of the COIL and file off any burrs.

## **STEP 4:**

Begin threading the COIL onto one end of the COIL SUPPORT. **BE CAREFUL** to not deform the COIL during this process. The COIL should thread smoothly. Continue until about 5-1/2 turns are past the COIL SUPPORT or close to the center. Exact centering is not important. Again, note your reference line.



**NOTE:** PENETROX PASTE FOR LUBRICATING SCREW THREADS AND TUBING JOINTS HAS BEEN SUPPLIED. USE A VERY SMALL AMOUNT ON EACH SCREW THREAD AND UNDER THE COIL POSTS DURING THE NEXT OPERATION.

## **STEP 5:**

Insert the COIL INSULATOR (M2AFG0050) into your COIL SUPPORT (M2ACA1554). Rotate the COIL and the COIL SUPPORT so the leading end of the COIL goes over and just past the inner hole in the COIL INSULATOR. Now slide on one COIL POST on to one end of the COIL so it is right over the first hole. Next, carefully slide on the ELEMENT SECTION #6 (M2AEP40MC-6) and align it so both holes in the tube match the two holes in the COIL INSULATOR.

## **STEP 6:**

Insert hardware through the ELEMENT SECTION #6 and the COIL INSULATOR and begin threading it into the COIL POST. Tighten hardware. Thread the SET SCREW into the top of the COIL POST and with about 1/2" of wire protruding past the COIL POST, tighten the SET SCREW gently. Use supplied ALLEN WRENCH to tighten the SET SCREW.

## **STEP 7:**

The second COIL POST is mounted on the OPPOSITE SIDE of the COIL INSULATOR so 15 1/2 turns of the COIL are used. The extra 1/2 turn COIL should pass over the COIL INSULATOR hole. Slide on the second COIL POST and align it over the hole. Slide on ELEMENT SECTION #4 (M2AEP40MC-4) and fasten the COIL POST to the tubing assembling using the supplied hardware. Use your reference line and adjust the coil so the line has no more tilt than 3/4".

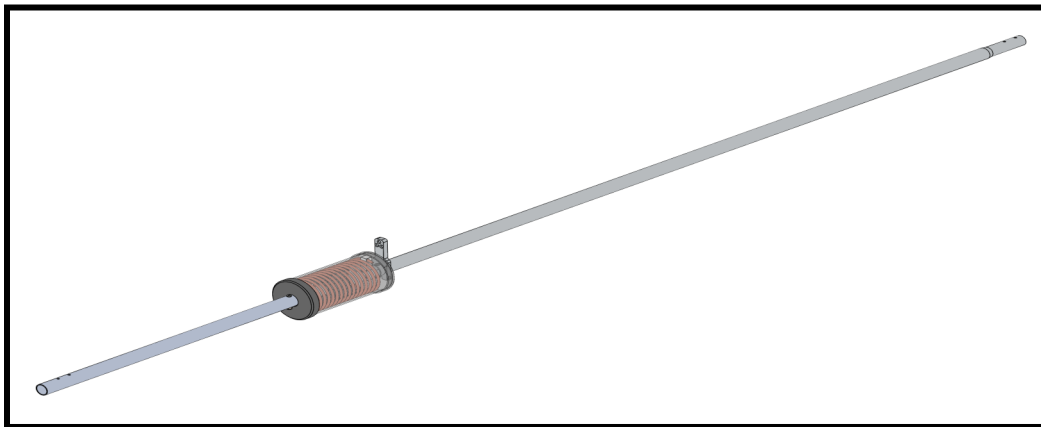
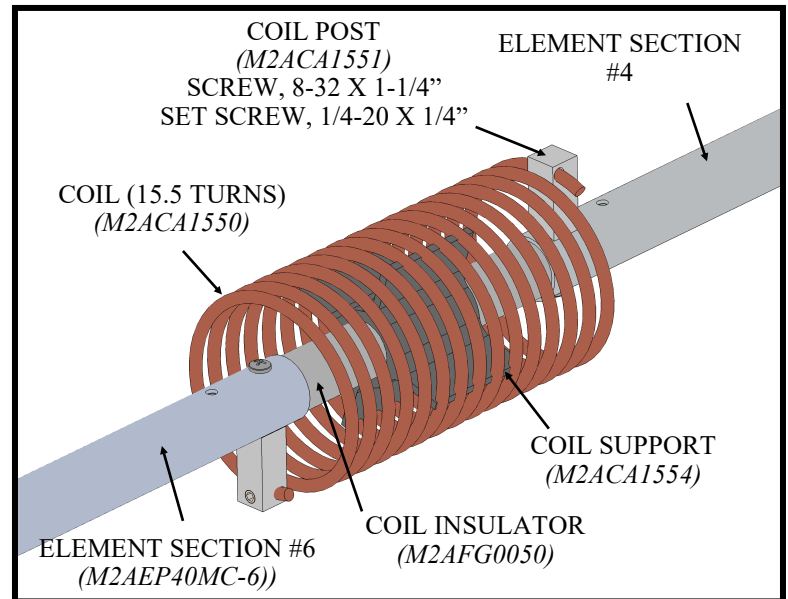
# 40M COIL ASSEMBLY INSTRUCTIONS

## **STEP 8:**

Insert the SET SCREW into the COIL POST and tighten gently. Adjust the COIL and COIL SUPPORT location for equally spaced turns. The distance between each turn should be the same as the COIL diameter. Once the COIL is straight and aligned, tighten the final SET SCREW securely.

## **STEP 9:**

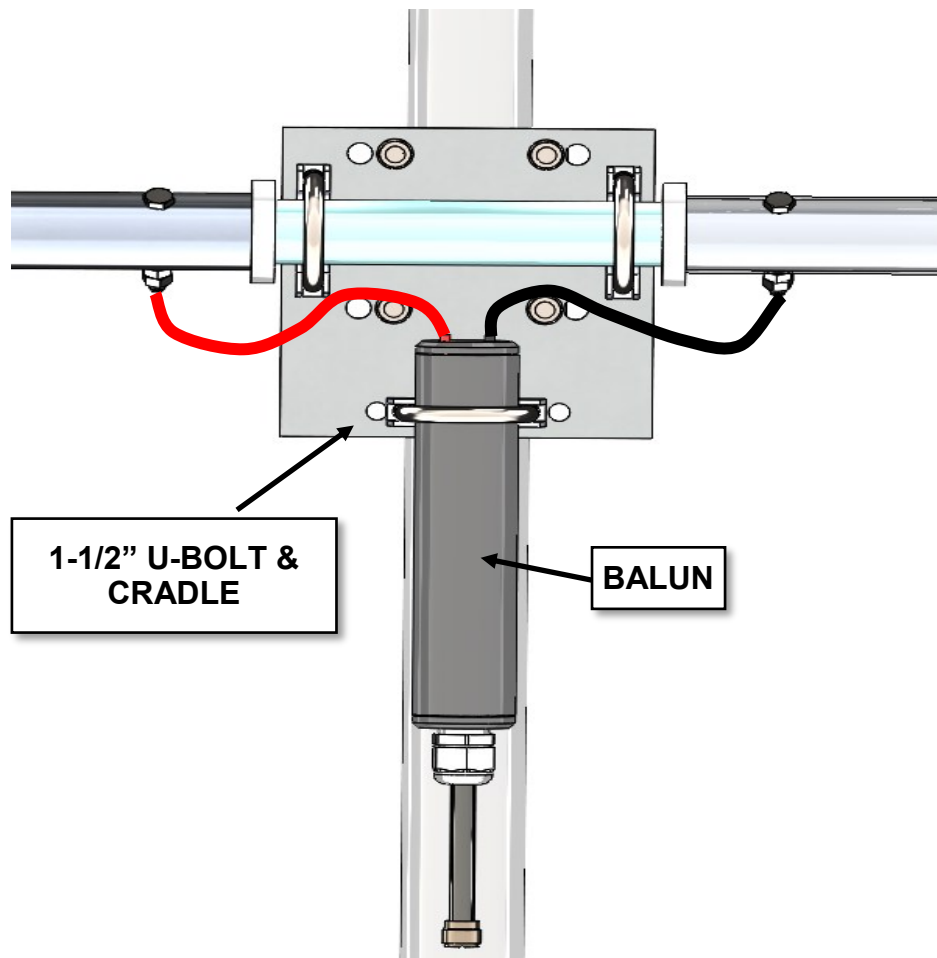
Slide COIL COVER and COIL END CAPS onto COIL ASSEMBLY. Secure COIL END CAPS into position by securing hardware through TUBE ASSEMBLIES on both ends of the COIL ASSEMBLY. Slide ELEMENT OVERHEAD SUPPORT onto ELEMENT SECTION until it reaches the head of the screw holding on the COIL COVER. Clamp ELEMENT OVERHEAD SUPPORT in place with screw and locknut.



## **STEP 10:**

Assemble all the remaining COIL ASSEMBLIES by repeating steps 1-9. Set COIL ASSEMBLIES aside for future use.

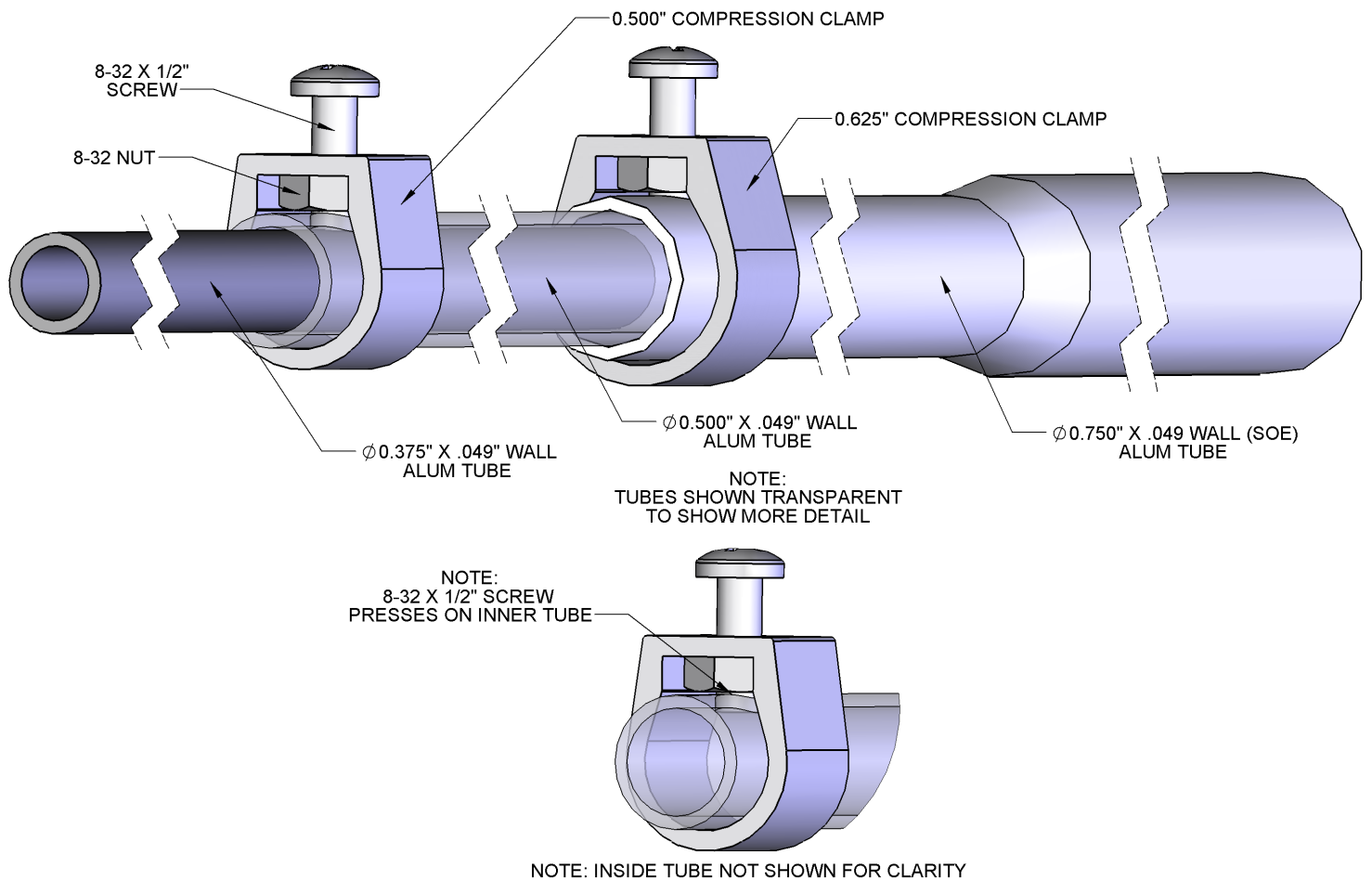
# 40M1C BALUN DETAIL AND TUNNING



## TUNNING INSTRUCTIONS

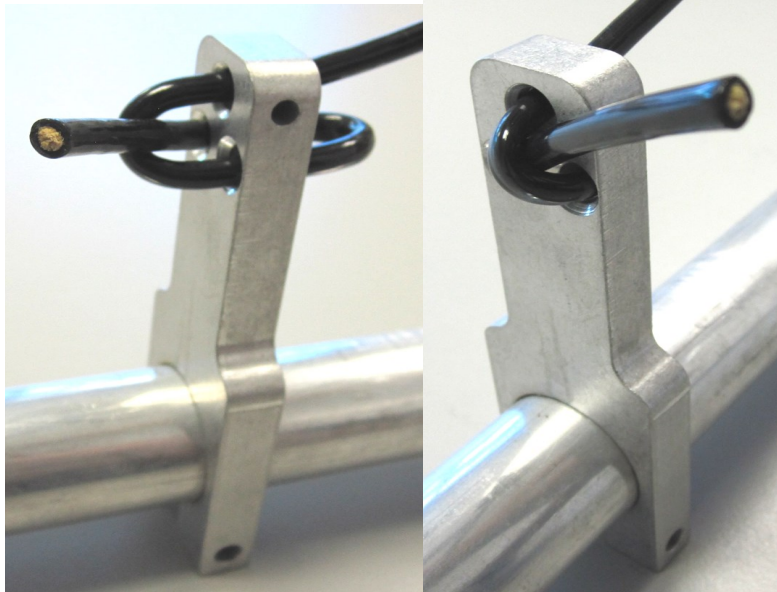
Height above ground can have a significant effect on the tuning of the dipole. M2 has provided a 1/2 diameter element tip that can be shortened or lengthened to account for your particular height above ground. M2 suggests a minimum height above ground should be approx. 70 ft. At 70 ft above ground the tip length should be at 44" exposed. As the dipole is positioned closer to ground the element tip will need to shorten. 1" inch of tip adjustment will move the resonate frequency approx 20 KC.

# COMPRESSION CLAMP DETAIL





# LOCK BLOCK AND KNOT DETAIL



**NOTE:** After final adjustments of knots and lock blocks, use electrical tape to tape the excess rope down to the main rope as prevention for rope slippage.

# 40M1C PARTS & HARDWARE

DESCRIPTION.....	QTY
ELEMENT #1, 1-1/2" X .058" X 60" (M2AEP40MC-1).....	2
ELEMENT #2, 1.375 X .058 X 23.812 (M2AEP40MC-2).....	2
ELEMENT #3, 1-1/4" X .058" X 60" (M2AEP40MC-3).....	2
ELEMENT #4, 1" X .058" X 24" (M2AEP40MC-4).....	2
ELEMENT #5, 1" X .058" X 48", SOE (M2AEP40MC-5).....	2
ELEMENT #6, 3/4" X .049" X 24" (M2AEP40MC-6).....	2
ELEMENT TIP, 1/2" X .049" X 47" (M2AEP40M1C-1).....	2
FIBERGLASS CENTER, 1-1/4" X 24" (M2AFG0034).....	1
POLY DISC INSULATOR, 1-1/4" (M2ADI0020).....	2
COMPRESSION CLAMP, 5/8" (M2AMC0145).....	2
ELEMENT OVERHEAD SUPPORT BRACKET (M2APL0212) .....	2
TURNBUCKLE PLATE, 2" X 2" X 1/8" (M2APT0120) .....	1
BOOM TO MAST PLATE, 3/16" X 6" X 6" (M2APT0300).....	1
DACRON ROPE, 3/16".....	27 ft.
1:1 BALUN ASSEMBLY (FGBL0500).....	1
2" U-BOLT & CRADLE (HUC20000050) .....	3
1-1/2" U-BOLT & CRADLE (HUC15000050).....	3
THIMBLE, 3/16" (WAC01880020).....	2
TURNBUCKLE, 5/16 X 6", H&E, ZINC (HTB03120200).....	2
PENETROX / ZINC PASTE CUP .....	1
COIL INSULATOR, (M2AFG0050).....	2
COIL, 15.5 (40M) (M2ACA1550).....	2
COIL POST, (M2ACA1551).....	2
COIL END CAP, (M2ACA1552).....	2
COIL COVER, (M2ACA1553).....	2
COIL SUPPORT, (M2ACA1554).....	2
<b>HARDWARE:</b>	
LOCKWASHER, 5/16", SS .....	8
NUT, 5/16-18, SS .....	8
BOLT, 1/4-20 X 2-1/4", HEX HEAD, SS .....	2
SET SCREW, 1/4-20 X 1/4 SS.....	4
LOCKWASHERS, 1/4", SS.....	2
NUT, 1/4-20, SS .....	2
LOCKNUT, 1/4-20, SS .....	2
SCREW, 8-32 X 1-3/4", PHILLIPS PAN HEAD, SS.....	4
SCREW, 8-32 X 1-1/2", PHILLIPS PAN HEAD, SS.....	6
SCREW, 8-32 X 1-1/4", PHILLIPS PAN HEAD, SS.....	8
SCREW, 8-32 X 1/2", PHILLIPS PAN HEAD, SS.....	2
LOCKNUT, 8-32, SS .....	16
NUT, 8-32, SS .....	2
ALLEN HEAD WRENCH, 1/8".....	1
COIL SPREADING TOOL.....	1

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