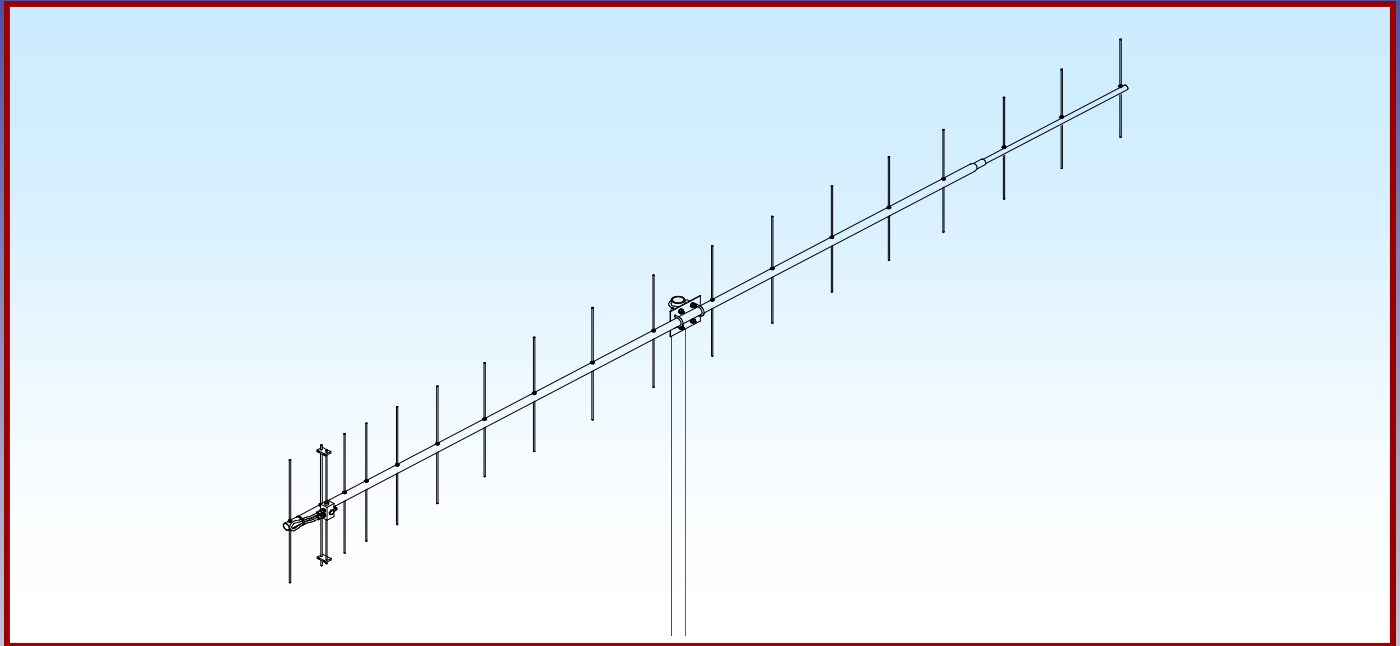




M2 Antenna Systems, Inc.

Model No: 440-18



SPECIFICATIONS:

Model	440-18	Power Handling.....	1.5 kW
Frequency Range	420 To 453 MHz	Boom Length / Dia	137" / 1" To 3/4"
*Gain	16.64 dBi	Maximum Element Length	14"
Front to back.....	23 dB Typical	Turning Radius:.....	69'
Beamwidth	E=27° H=32°	Stacking Distance	51" High & 52" Wide
Feed type.....	Folded Dipole	Mast Size	2"
Feed Impedance.....	50 Ohms Unbalanced	Wind area / Survival.....	0.68 Sq. Ft. / 100 MPH
Maximum VSWR	1.2:1 Typical	Weight / Ship Wt.	5 Lbs. / 7 Lbs.
Input Connector	"N" Female		

***Subtract 2.14 from dBi for dBd**

FEATURES:

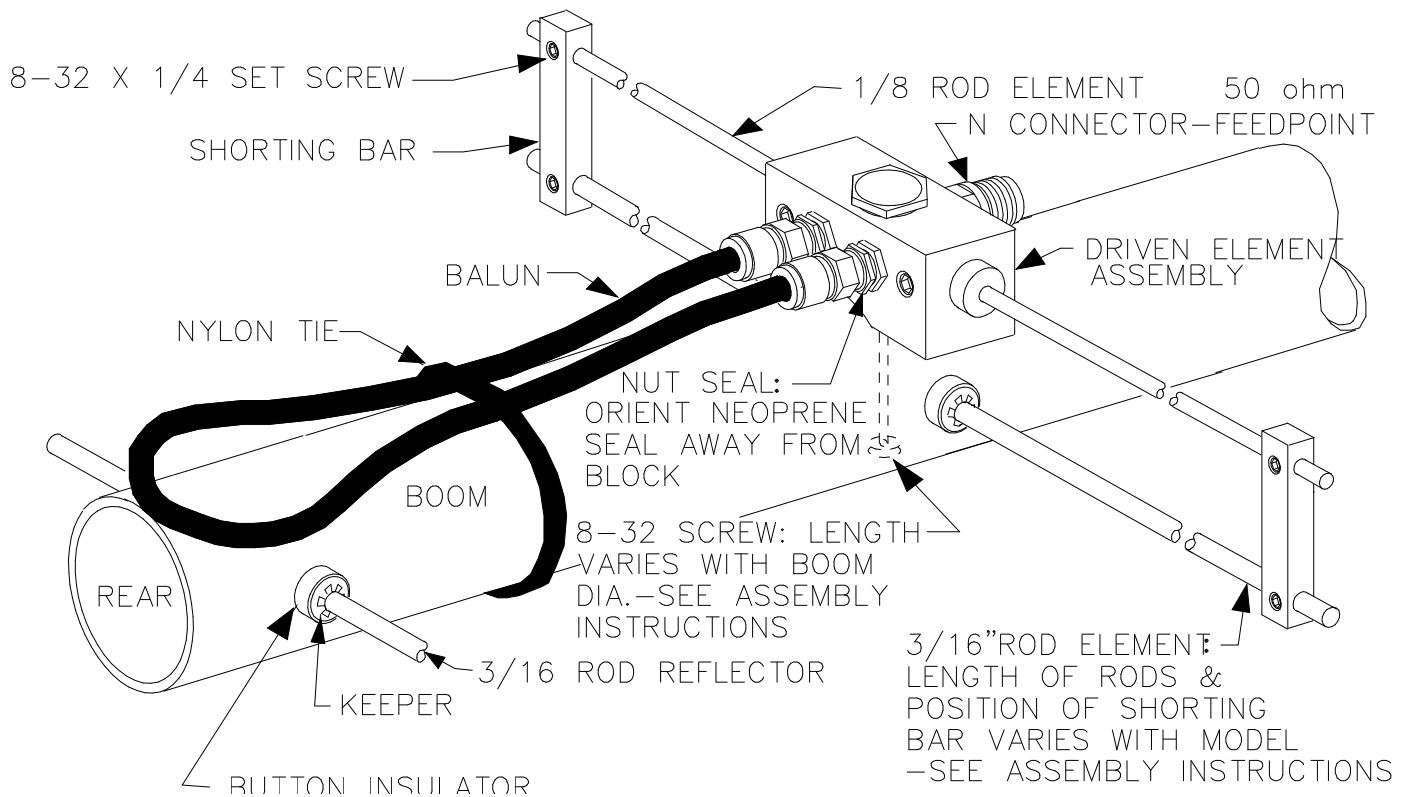
The 440-18 is a computer optimized broadband yagi featuring an excellent pattern and good gain across its bandwidth. It can be mounted vertically or horizontally and is ideal for stacking two or more for additional gain. Its light weight yet sturdy construction keep the cost low and the performance high. Use it for ATV, OSCAR, FM, LONG HAUL TROPO, ETC. We guarantee you will be impressed.

The heart of the 440-18 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 440-18 offers you uncompromising performance, enduring mechanical construction, and long term electrical integrity. Where else but M².

440-18 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.

440-18 ASSEMBLY MANUAL

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 center and balun connectors facing to rear. Block orientation may be reversed if you wish feedline to exit from rear of boom.
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 plate is normally mounted at the balance point. 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. Since the feed line represents significant weight it is best to have it attached and fastened along the boom with cable ties before balancing the boom and mounting the plate.

10. MOUNTING AND STACKING INFORMATION

Keeping metallic masts, crossbooms and the feed coax out of the element plane will help maintain good VSWR and pattern.

FOR HORIZONTAL POLARIZATION, the 440-18 may be mounted to a metallic vertical mast or a horizontal NON-METALLIC crossboom (no conductive material in element plane). If mounted to a horizontal crossboom, route the feedline forward to the boom-to-mast plate, loop down, and bring back to crossboom at least 6" beyond element tips.

FOR VERTICAL POLARIZATION, the 440-18 may be mounted to a NON METALLIC VERTICAL MAST (no conductive material in element plane) or a horizontal metallic crossboom. If mounted to a vertical mast, route the feed line forward to the boom-to-mast plate, loop out at a right angle to the boom, and bring down to the mast at least 6 inches BELOW THE ELEMENT TIPS. The feedline may also exit at the rear of the boom and loop back to the mast.

Stacking? Call **M²** and let us help you DO IT RIGHT

THIS COMPLETES THE ANTENNA ASSEMBLY.

CAREFULLY MANUFACTURED BY:

M² ENTERPRISES
4402 N. Selland Ave.
FRESNO, CA 93722
(559) 432-8873 FAX (559) 432-3059

440-18 DIMENSION SHEET

SPACING

0.50

5.688

8.875

12.813

18.625

25.0

32.5

40.062

48.5

57.625

66.625

76.125

86.25

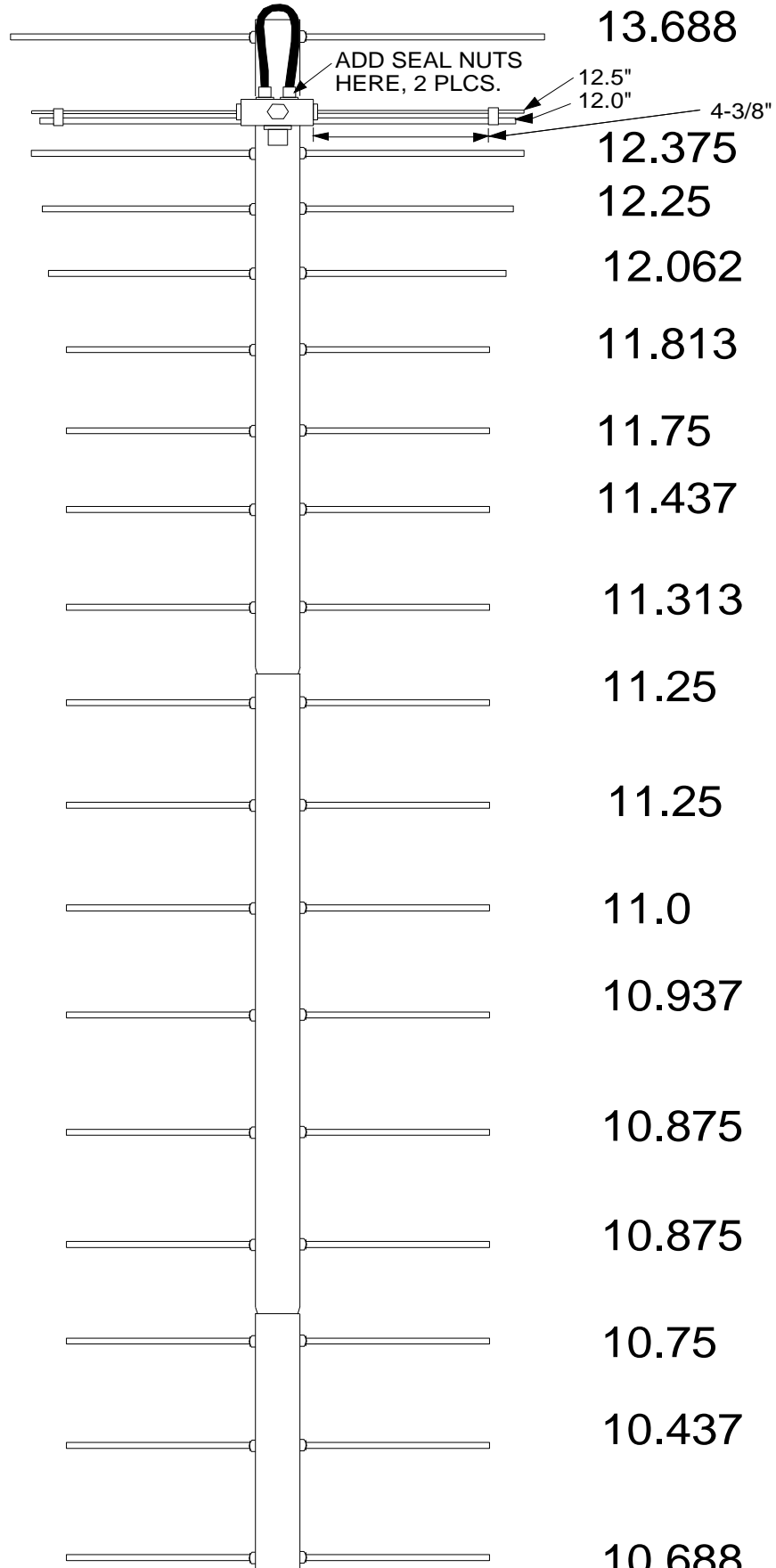
96.250

106.125

116.0

126.062

135.813



13.688

12.375

12.25

12.062

11.813

11.75

11.437

11.313

11.25

11.25

11.0

10.937

10.875

10.875

10.75

10.437

10.688

440-18 PARTS & HARDWARE

DESCRIPTION	QTY
BOOM SECTION, 1 X .058 X 57" SOE	1
BOOM SECTION, 1 X .058 X 60" SOE	1
BOOM SECTION, 3/4 X .058 X 25-1/2"	1
ELEMENTS, 3/16 ROD x Dimension Sheet	18
DRIVEN ELEMENT BLOCK.....	1
BALUN, RG-6 1/2 WAVE	1
BOOM-TO-MAST PLATE, .188 X 3" X 4".....	1
U-BOLT AND CRADLE, 2"	2
U-BOLT, 1"	2
ASSEMBLY MANUAL.....	1

IN HARDWARE BAG:

SHORTING BAR	2
BUTTON INSULATORS.....	36
KEEPER, SS.....	36
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	5
LOCKNUT, 8-32 SS	4
LOCKWASHER, #8 SS	1
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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