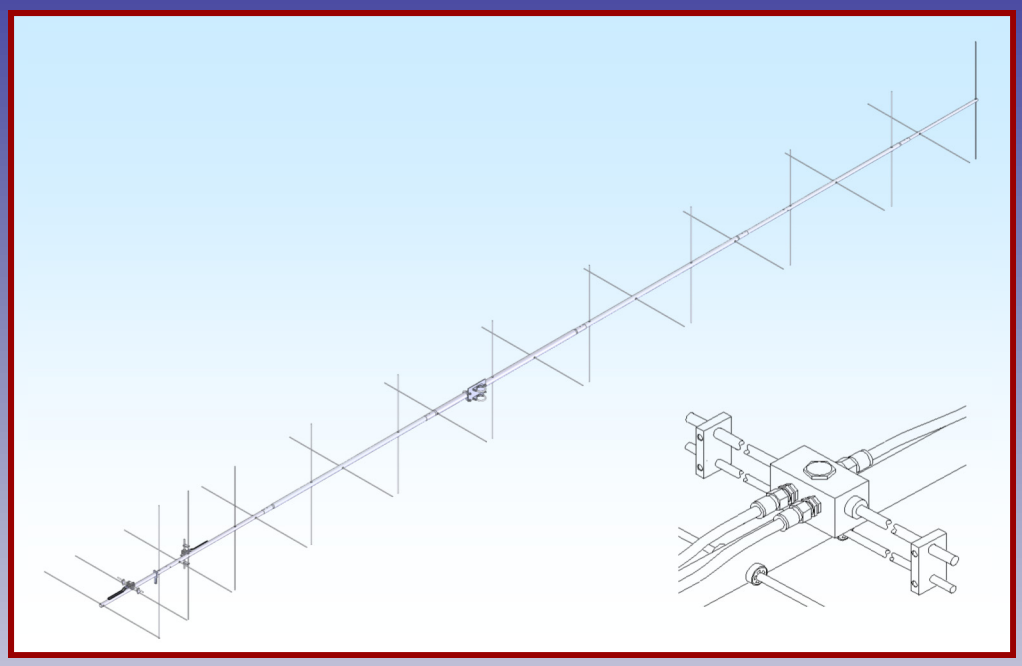
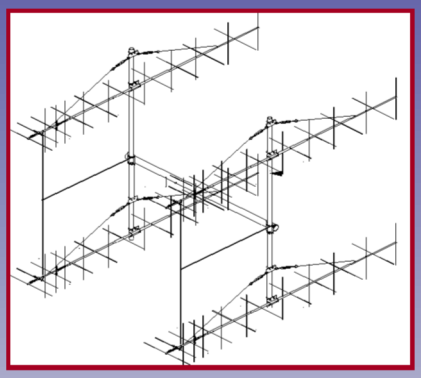
M2 Antenna Systems, Inc.
Model No: 2MXP22A





2MXP22A 4 Bay Array

SPECIFICATIONS:

Model	2MXP22A
Frequency Range	144 To 145 MHz
*Gain	16.1 dBi
Front to back	21 dB Typical
Beamwidth	E=26° H=29°
Feed type	"T" Match
Feed Impedance.	50 Ohms Unbalanced
Maximum VSWR	1.2:1
Input Connector	"N" Female

Power Handling	2.5 kW
Boom Length / Dia	25' 8" / 1-1/2" To 3/4"
Maximum Element Length	40-1/2"
Turning Radius:	184"
Stacking Distance	150" To 156" Max.
Mast Size	1-1/2" to 2" Nom.
Wind area / Survival	2.2 Sq. Ft. / 100 MPH
Weight / Ship Wt.	11 Lbs. / 13 Lbs.

***Subtract 2.14 from dBi for dBd**

FEATURES:

The 2MXP22A began as a new special antenna for Mike, K6MYC. He wanted and antenna that would make it's presence known on EME. It has just one more element in each plane than the famous 2MXP20 but another 5 foot of boom length. Most importantly, it produces 3/4 of a db more gain than the 'XP20 and just 3/4 of a db less than the world renowned 2M5WL. It came out so nice with a very flat match and a boom length right in between the others, it was just too good not to add it to the great family of M2 2M antennas!

Just a pair of 2MXP22A's will make a great low cost, low weight, low wind load EME system. The M2 boys have come up with an optimum cross boom kit (CB-LB-13) for two antennas and it is still small enough to use with the Yaesu G -5500 Az-El rotator system. Want more EME aluminum in the air? The M2 MT-1000 Elevation rotator makes arrays up to 8 X 2MXP22A's a piece of cake to steer!

The system is ideal for terrestrial contacts as well. It so nice when a new guy comes on 250 miles away running 50W and a vertical, you can instantly switch to vertical polarity using a coax relay like our HPR-1 and BOOM, the guy is armchair copy! M2 has a full line of power dividers, phasing lines, preamps sequencers (S2) including the NEW 2M-1K2 solid state amp. See the whole new generation of high performance EME arrays and systems on our web site!

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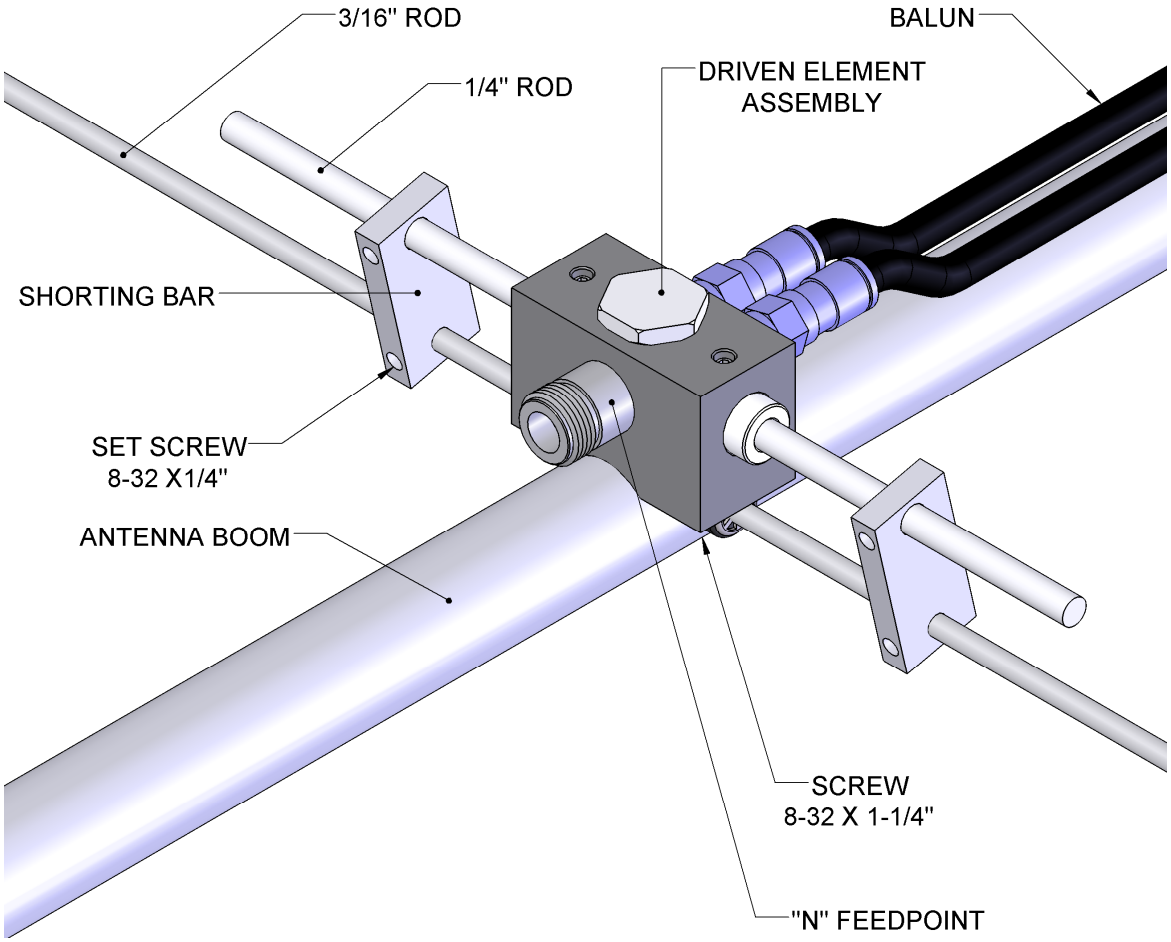
10/4/16
Rev.03

2MXP22A ASSEMBLY MANUAL

1. Start by laying out the boom sections using the DIMENSION sheet as a guide. Use 8-32 screws and locknuts to join sections. Sections are swaged to fit each other. NOTE: If your are stacking 2 or 4 antennas using an M2 CB-LB-13 or an 'H' frame, locate the machined arm used to connect the 'L' brace or 'T' brace to the rear of the antenna and slide it onto the rear boom section. It goes just behind the forward reflector element, for more information see stacking kit assembly manual.

2. Lay out the elements by length and position as shown the ***DIMENSION*** sheet. Start with the ***REAR*** 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 SHAFT RETAINERS (KEEPERS) yet. This is easier to do after all the REAR set of 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. Also some elements like D2 have two different lengths, 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.

2MXP22A ASSEMBLY MANUAL

5. NOTE: The SHAFT RETAINERS, used for securing the elements, should always be used for permanent and long term antenna installations. For portable or temporary use, or whenever it is anticipated that the antenna will be disassembled within a short time, the retainers may be left off. The button insulators, normally a tight fit, hold the elements quite securely.
   Begin installing the stainless shaft retainers. Use thumb and index finger to hold a Shaft Retainer over end of the 3/8 x 3" push tube (Shaft Retainer dished into tube). Hold the element firmly and start the keeper onto the rod by applying pressure with the push tube. Push the Shaft Retainer 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 Shaft Retainer too far). Repeat for the opposite side. Continue installing Shaft Retainers until all The HORIZONTAL elements are locked in place. NOW repeat steps 2-5 for the VERTICAL elements.

6. Mount the DRIVEN ELEMENT T-MATCH BLOCKS per the position on the DIMENSION SHEET using a single 8-32 X 1-1/4" screw for each. Orient the ***REAR*** block with feed connector facing to rear and the ***FORWARD*** block with the feed connector facing the rear.

7. Coil the rear or HORIZONTAL balun so it will not extend beyond the reflector when installed. Attach balun to the Block and tighten the connectors ***gently*** using a 7/16" end wrench. A lot of torque is unnecessary. Squeeze the balun coil across the middle until it is 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 then onto the 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 set screws.

9. The boom to mast plate is normally mounted at the balance point. (SEE DIMENSION SHEET). Use two 1-1/2" U-bolts and the stainless nuts and lock washers provided. DO NOT OVER TIGHTEN. 2" U-bolts are provided for mounting the antenna to a 2" ***fiberglass*** mast.

THIS COMPLETES THE 2MXP22A ANTENNA ASSEMBLY.

10. **MOUNTING AND STACKING INFORMATION for 2 or 4 2MXP22A antennas.**
    Stacking distance is BEST at 148" to 156". Be sure all antennas are oriented so the REAR and FORWARD driven element blocks are on the SAME SIDE of the boom and NOT MIRROR IMAGE to each other. The machined arm should already be on the rear 1 inch boom section just in front of the REAR driven element block. These arms are provided in the M2 "L" or the "T" brace kit. The rest of the information for "L" or "T" brace kit and cross boom or "H" frame stacking is in the respective assembly manuals. M^2 can provide low loss LMR400 or LMR600 phase lines and 2 and 4 port power dividers.

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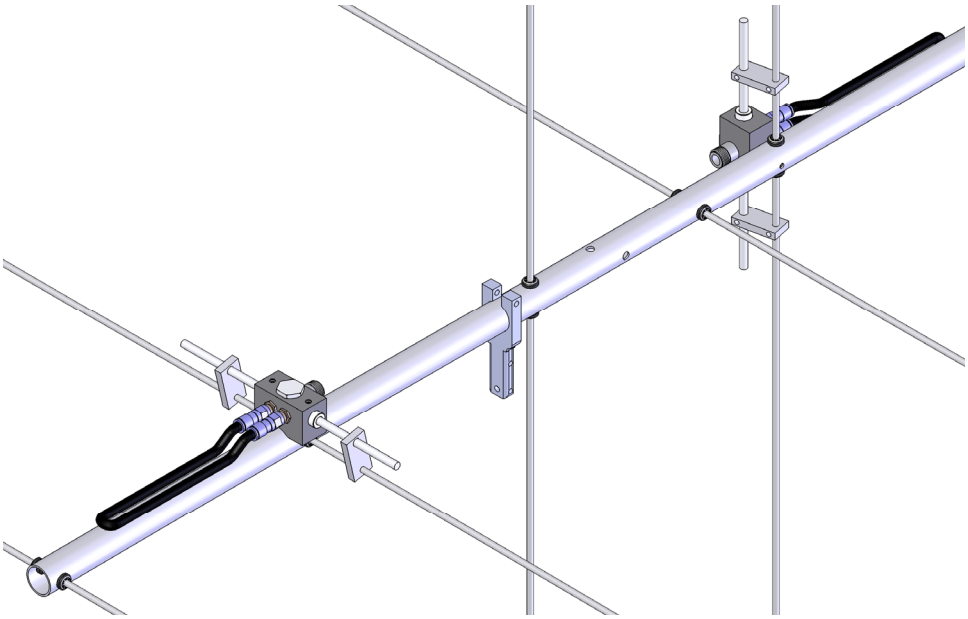
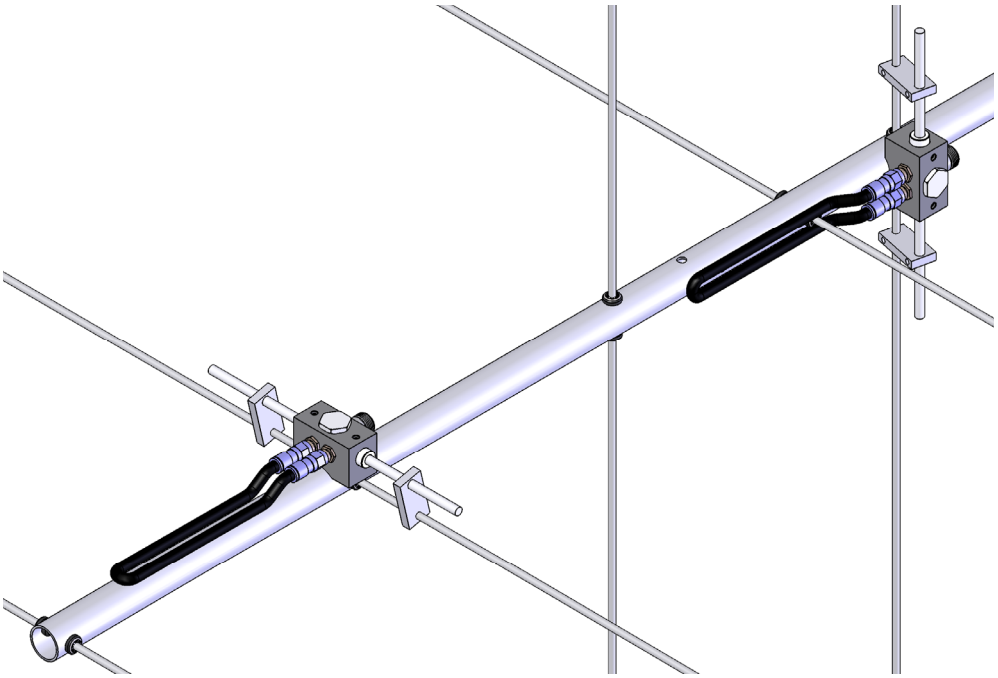
2MXP22A D.E. BLOCK DETAILS

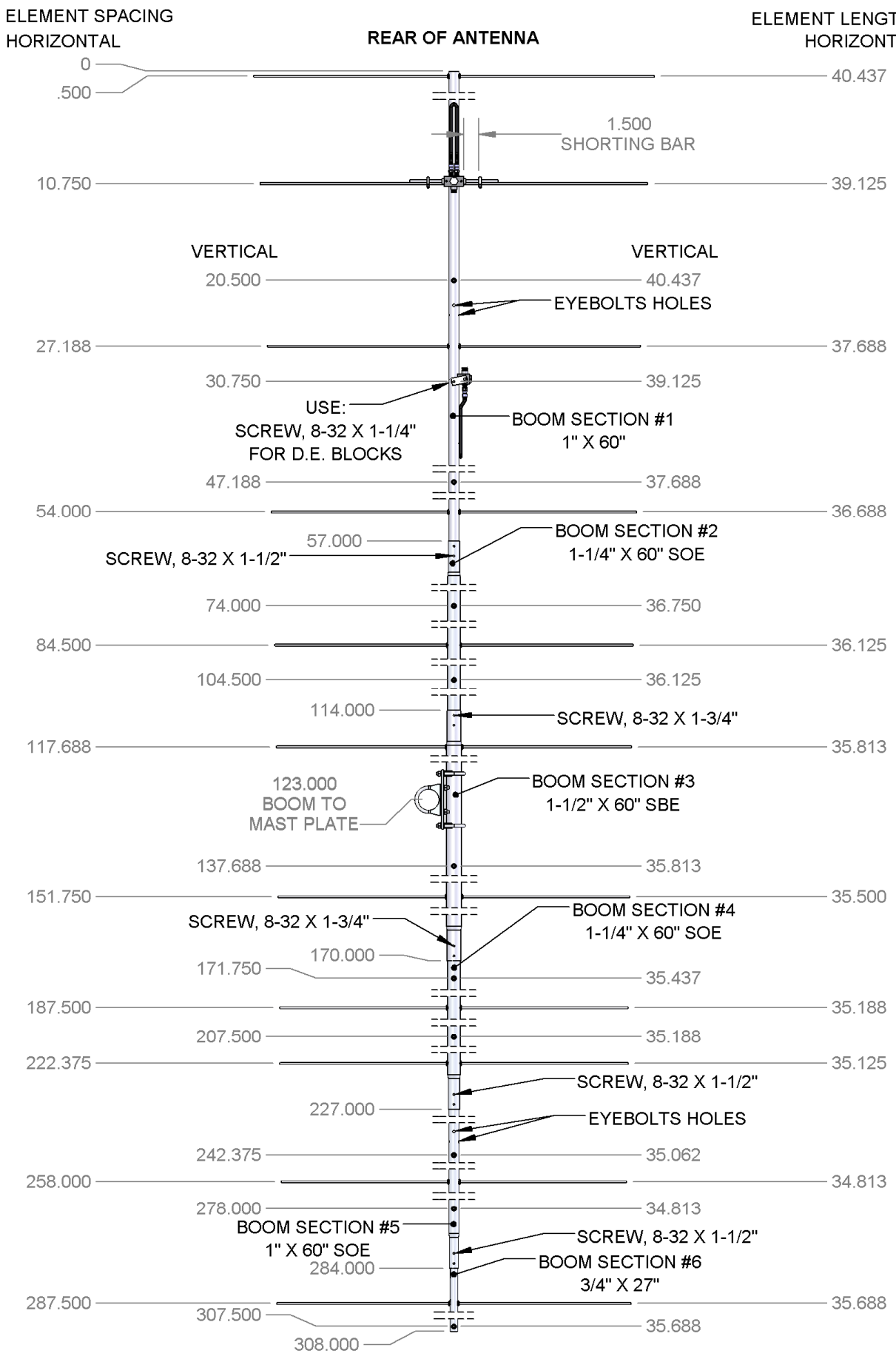


The above detail shows the preferred assembly when stacking in a 2 x 2 four bay configuration. Note the position of the “T” brace coupling arm, in front of the rear driven element and at least 4” **behind** the vertical reflector. This 4 inch spacing minimizes the RF detuning of the front reflector. This arm position gives easy entry to the “T” brace for the feed lines from each driven element, When stacking side by side in a 2 x 1 configuration, the rear elements on each side will be vertically polarized and the T brace will be horizontal. Note the distance from the “N” connector of the front driven element to the first director of the rear elements are in close proximity to each other. M2 recommends a short crimp on “N” male connector. The use of long manually installed “N” connectors will not allow enough clearance for the cables to clear the first director. The driven element block can be rotated so the ’N’ connector faces forward, but this configuration uses more cable length.



The above antenna is an alternate mounting of the front driven element to avoid the interference of the connector to the element described above. This could cause the need for longer feed line to the front driven element.

2MXP22A DIMENSION SHEET



2MXP22A PARTS & HARDWARE

DESCRIPTION	QTY
BOOM, 3/4 X .049 X 27” ALUM TUBE	1
BOOM, 1.0 X .058 X 60” PLAIN ALUM. TUBE	1
BOOM, 1.0 X .058 X 60” SOE	1
BOOM, 1-1/4 X .058 X 60 SOE, ALUM.	2
BOOM, 1-1/2 X .058 X 60 SBE ALUM.	1
BOOM TO MAST PLATE, 3/16 X 4 X 6”	1
TURN BUCKLE PLATE, 1/8 X 2 X 4” for 1-1/2 & 2” UBOLT	1
‘T’ MATCH BLOCK ASSEMBLY	2
BALUN CABLE RG-6U, HALF WAVE	2
DACRON OR KEVLAR, 3/32” X 23 FT	1
ELEMENT, 3/16 X SEE DIMENSION SHEET	22

HARDWARE BAG #1

U-BOLT AND CRADLE, 2”	3
U-BOLT AND CRADLE, 1-1/2”	2

HARDWARE BAG #2

BUTTON INSULATOR, 3/16” POLY	44
KEEPER, 3/16” SS	48
TURNBUCKLE, HOOK AND EYE, 1/4”	2
NUT, 5/16-18 SS	10
LOCKWASHER, 5/16” SPLIT RING SS	10
NUT, 1/4-20, SS	2
SCREW, 8-32 X 1-3/4” SS, PHILLIPS	4
SCREW, 8-32 X 1-1/2” SS, PHILLIPS	4
SCREW, 8-32 X 1-1/4” SS, PHILLIPS	4
SET SCREW, 8-32 X 1/4” SS	8
LOCKNUT, 8-32 SS	10
SHORTING BLOCK	4
EYE BOLT, 1/4-20 X 2-1/2”	2
NYLON TIE, 5” BLACK	4
ALLEN WRENCH, 5/64”	1
PUSH TUBE, 3/8” X 3” ALUM	1

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