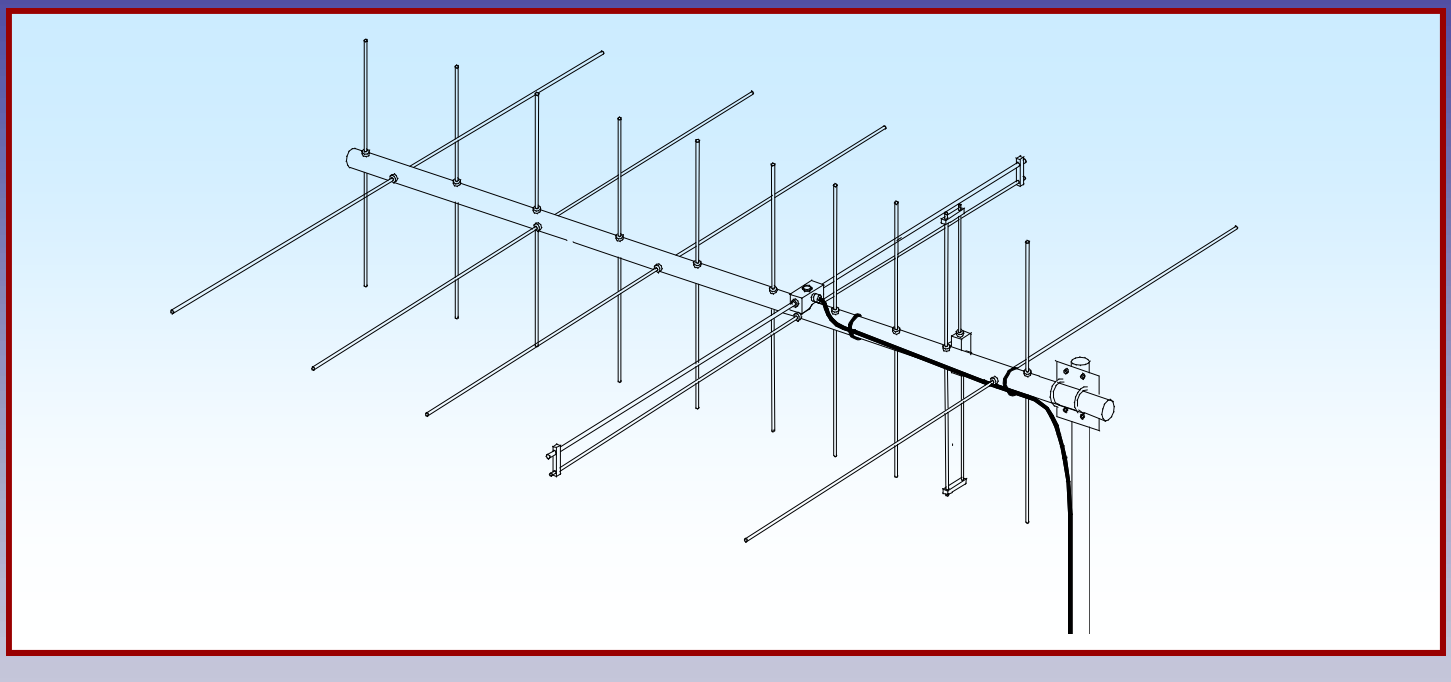
M2 Antenna Systems, Inc.
Model No: 2M5-440XP



SPECIFICATIONS:

Model	2M5-440XP
Frequency Range	144-148 / 430-450 MHz
*Gain 2M / 440	11.14 / 14.14 dBi
Front to back 2M / 440	15 dB / 25 dB
Feed Impedance.	50 Ohms Unbalanced
VSWR	1.3:1
Connectors	"N" Female
Power Handling 2M / 440	1.5 kW / 750W
Boom Length / Dia	60" / 1"
Maximum Element Length	40"
Turning Radius:	70"
Stacking Distance	Call Factory
Mast Size	1-1/2" to 2" Nom.
Wind area / Survival	1.1 Sq. Ft. / 100 MPH
Weight / Ship Wt.	5.5 Lbs. / 7 Lbs.

***Subtract 2.14 from dBi for dBd**

FEATURES:

The 2M5-440XP is ideal for linking repeaters and remote bases utilizing both 2 meters and 440 MHz. Elements are cross polarized to avoid the severe performance compromises on 440 MHz common to other dual band antennas that have all elements in the same polarity. The XP also works well on the OSCAR frequencies and is handy wherever dual band capability and compact size are required. Recently, with PACKET users finding horizontal polarization better on 2 meters, it has become even more useful.

Construction is designed for long term mechanical and electrical integrity. The heart of this antenna is the CNC-machined Driven Element Block. Connectors are O-ring sealed and the internal connections are encapsulated in a space-age silicone gel with nearly 4 times the dielectric strength of air. Balun connectors are triple sealed and nut-sealed at the block connectors. Elements are 3/16" 6061-T6 aluminum rod, centered through the boom on UV stabilized insulator buttons. All hardware except U-bolts is stainless steel (S.S. nuts and lockwashers are supplied for them, too).

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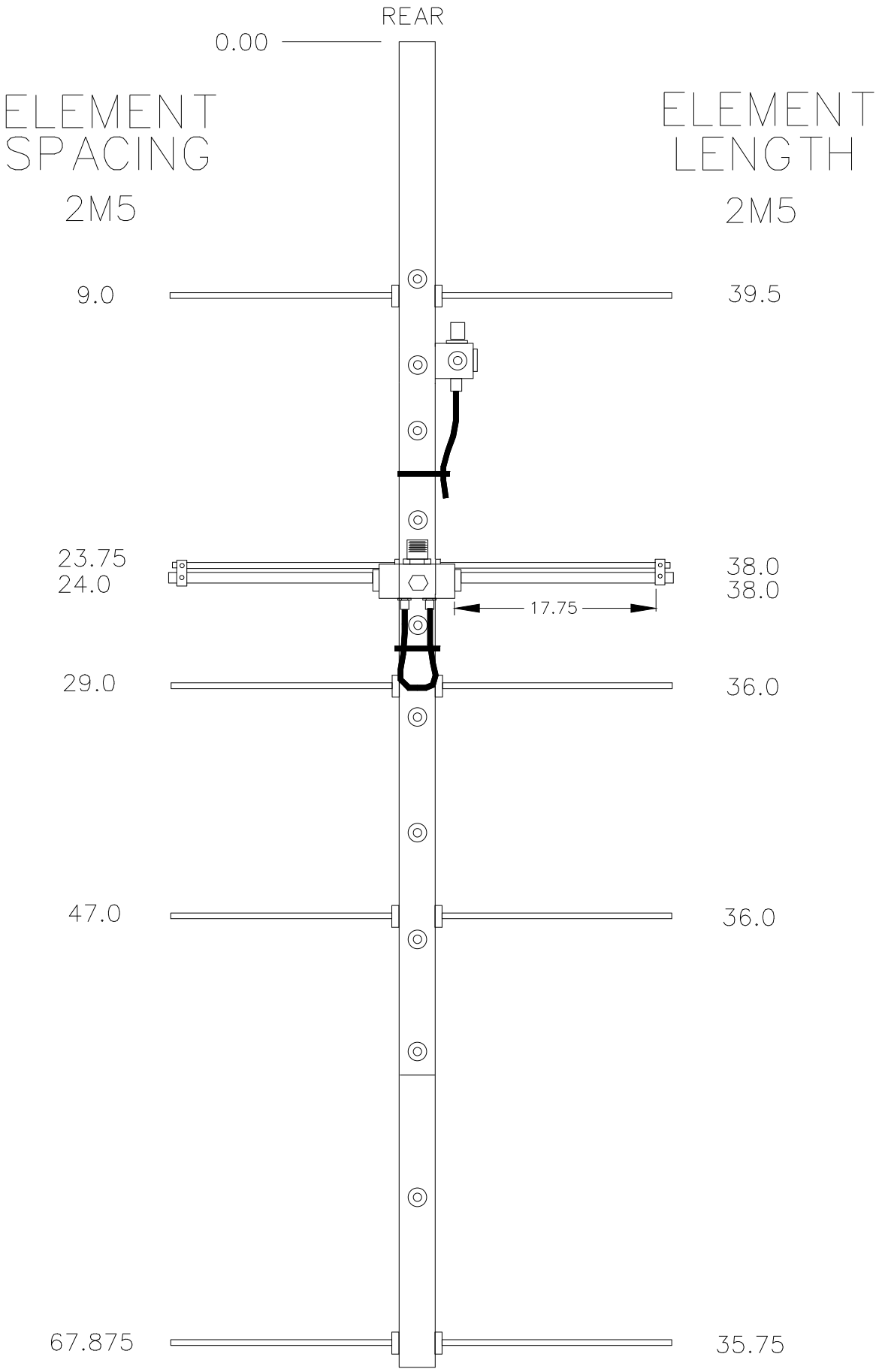
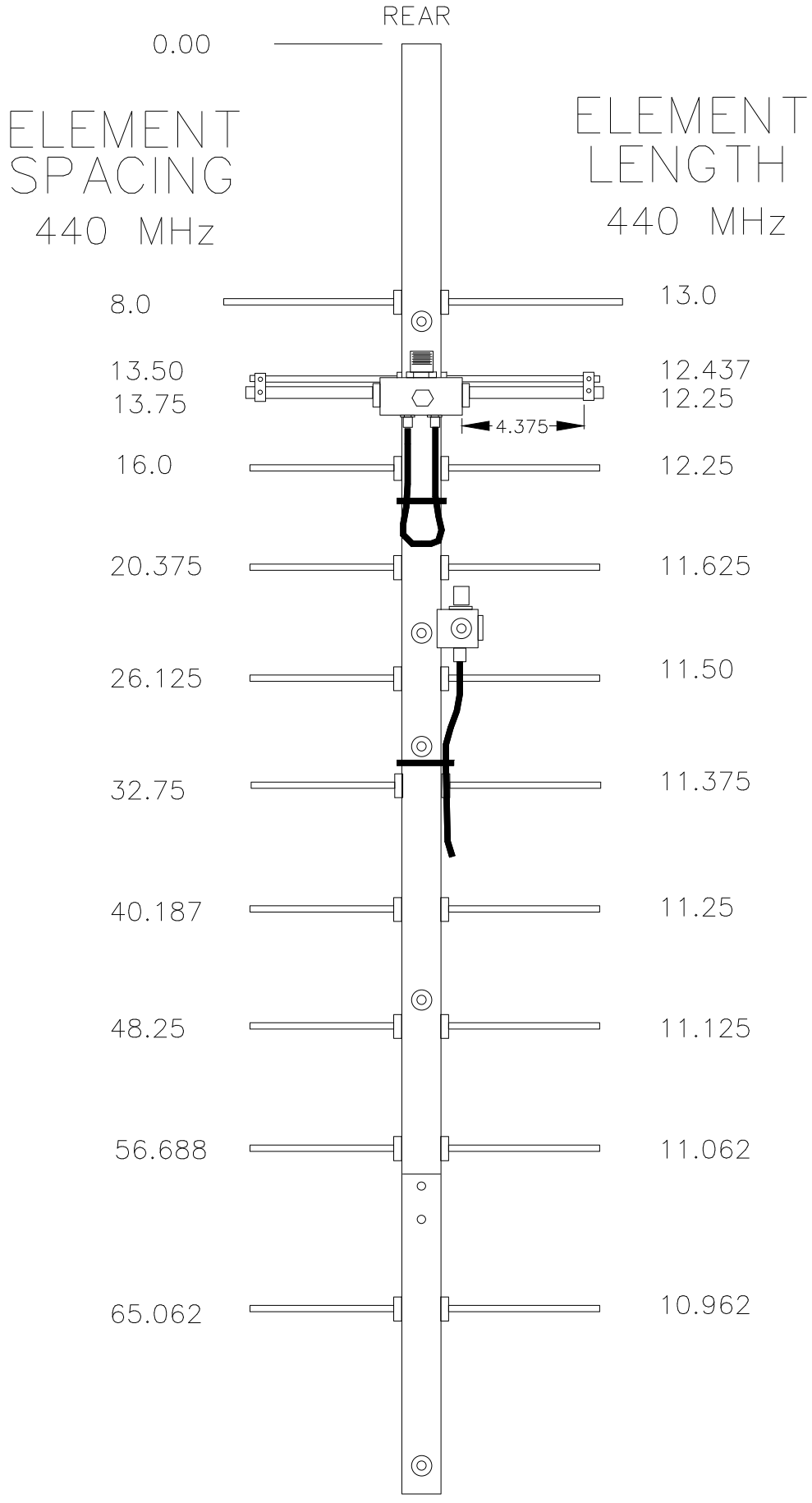
Rev.00

2M5-440XP DIMENSION SHEET



2M5-440XP DIMENSION SHEET



2M5-440XP ASSEMBLY MANUAL

TOOL REQUIRED FOR ASSEMBLY: Screwdriver, 11/32 nut driver or wrench, 7/16” and 1/2” end wrenches, pliers, measuring tape.

1. Assemble 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 each other or use 7/8” internal splice sections.

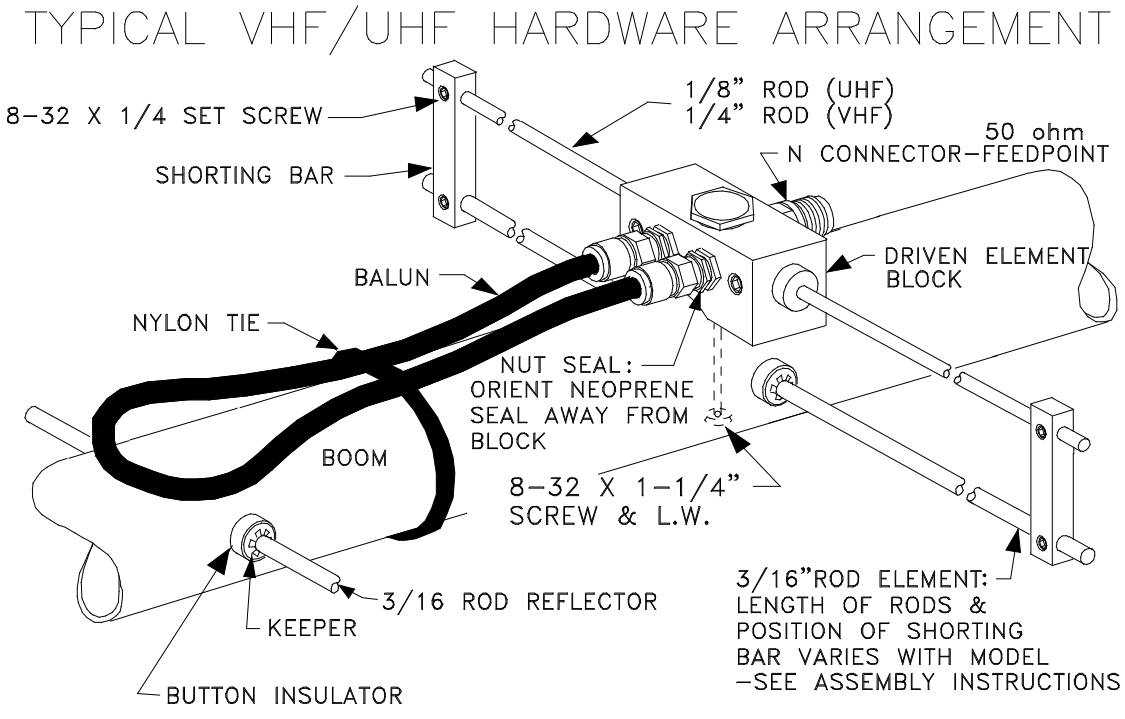
ASSEMBLING THE 440 MHz ELEMENTS

2. Lay out the elements by length and position as shown the DIMENSION sheet. Start with the reflector (longest) element. Balance it on your finger to find rough center and push on a black button insulator to about 1/2” off 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 CENTERING the element at this time and DO NOT INSTALL the stainless steel internal locking “keepers” yet. It is easier to do it after all the horizontal 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.

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.



2M5-440XP ASSEMBLY MANUAL

6. Mount the **440 MHz** DRIVEN ELEMENT BLOCK / ROD ASSEMBLY to the **TOP** of the boom using a single 8-32 X 1-1/4" screw and lockwasher. Orient the block with the two balun connectors facing to front, “N” connector to rear. Reverse for center mounted antenna.

7. Install the 8-32 x 1/4” set screws (internal Allen head - tool supplied) into the SHORTING BARS. Slide the bars onto the 1/8” Driven Element Block Rods and the 3/16” Driven Element Rods. Position the inner edge of each Shorting Bar 4-3/8” from the outer edge of the Driven Element Block (see Dimension Sheet). Align the bars with each other and tighten the set screws.

ASSEMBLING THE 2 METER ELEMENTS

8. Repeat steps #2 through #5 for the 2 meter elements, using the Dimension Sheet as your guide to lengths and spacing.

9. Mount the 2 Meter Driven Element Block to the left hand side of the boom with the two Balun connectors oriented to the FRONT, “N” connector to rear. Reverse for center mounted antenna. Secure with 8-32 x 1-1/4” screw and lockwasher. Install the Shorting Bars as in step #7.

10. Before installing the Baluns, thread 3/8” SEAL NUTS fully onto all connectors, with the black Neoprene face of the nuts facing out. Attach Baluns to the Driven Element Blocks as shown on the Dimension Sheet. 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 and will damage seal. Depending on mounting options, a balun may loop around other elements. This is normal. Form balun coax until it is close to the boom and secure with a nylon cable tie. Also secure the other balun. Ties should be snug but not crushing or kinking the coax.

REAR MOUNTING

11. The boom to mast plate is mounted at the rear of boom using two 1" U-bolts and the stainless nuts and lock washers provided. Rotate to desired polarity. DO NOT OVER TIGHTEN. 2” U-bolts are provided for mounting the antenna to your mast, tower leg, or crossboom.

CENTER MOUNTING

12. Find the balance point and mount the boom to mast plate with the 1” U-bolts. Since one set of elements will be in the plane of the mast, a non-conductive mast of fiberglass or equivalent is strongly recommended. 2” U-bolts are provided for mounting the antenna to your mast, tower leg, or crossboom.

13. Use good quality coax and “N” connector for your feedlines. Secure feed coax near connectors with cable ties to provide stress relief. Then route tight against boom (AVOID TOUCHING THE ELEMENTS WITH THE FEEDLINES and secure again with ties or black electrical tape at exit point.

THIS COMPLETES THE ANTENNA ASSEMBLY.

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2M5-440XP PARTS & HARDWARE

DESCRIPTION	QTY
BOOM SECTION #1, 1 X .058 X 60” SOE	1
BOOM SECTION #2, 1 X .058 X 11-1/2” STR	1
DRIVEN ELEMENT BLOCK, 2 METER	1
DRIVEN ELEMENT BLOCK, 440 MHz	1
BALUN, RG-6 146 MHz, 33”	1
BALUN, RG-6 440 MHz, 11”	1
3/16” ROD ELEMENTS, 2 METER	5
3/16” ROD ELEMENTS, 440 MHz	10
BOOM-TO-MAST PLATE, 3/16 X 3 X 4”	1
U-BOLT AND CRADLE, 2”	2
U-BOLT AND CRADLE, 1”	2
ASSEMBLY MANUAL	1

IN HARDWARE BAG:

SHORTING BAR, UHF 1/8” HOLE	2
SHORTING BAR, VHF 1/4” HOLE	2
BUTTON INSULATOR	30
KEEPER, SS	30
NUT, 5/16-18 SS	4
LOCKWASHER, 5/16 SS	4
NUT, 1/4-20 SS	4
LOCKWASHERS, 1/4 SS	4
SCREW, 8-32 X 1-1/4 SS	4
LOCKNUT, 8-32 SS	2
LOCKWASHER, #8 SS	2
SET SCREW, 8-32 X 1/4 SS	8
CABLE TIE, NYLON	5
SEAL NUTS	4
ALLEN HEAD WRENCH, 5/64”	1
PUSH TUBE, 3/8 X 3”	1

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