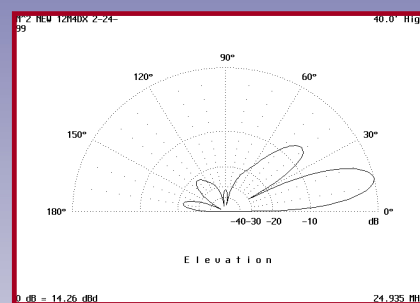
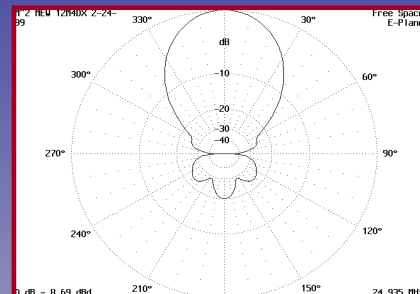
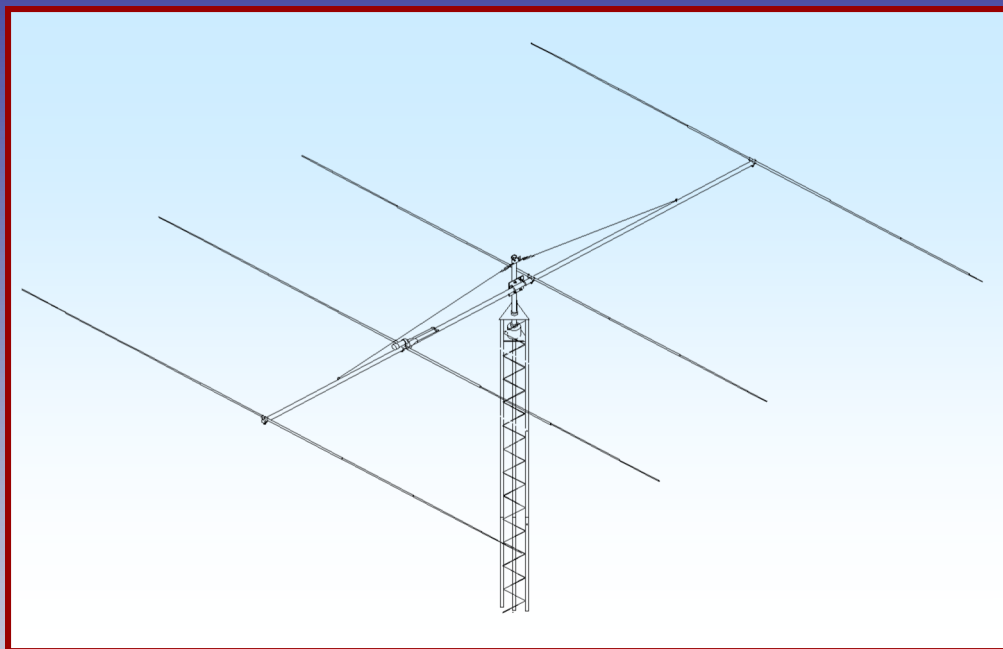




M2 Antenna Systems, Inc.

Model No: 12M4DX



SPECIFICATIONS:

Model	12M4DX	Power Handling	3 kW, Higher avl.
Frequency Range	24.890 To 24.990 MHz	Boom Length / Dia	27' / 2"
*Gain, (FS) / Over gnd.....	10.7dBi / 16.4dBi @40'	Element Length / Dia.	21.25' / 7/8" To 1/2"
Front to back.....	20 dB Typical	Turning Radius:	16' 8"
Beamwidth	E=48° / H=58°	Stacking Distance	35' To 41'
Feed type.....	Hair pin match	Mast Size	2" to 3" Nom.
Feed Impedance.....	50 Ohms Unbalanced	Wind area / Survival	4.4 Sq. Ft. / 100 MPH
Maximum VSWR	1.2:1	Weight / Ship Wt.	28 Lbs. / 39 Lbs.
Input Connector	SO-239, Others avl.		

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

FEATURES:

The 12M4DX is a great performer for its size. It was designed for low wind area but rugged and lightweight and it will save you a bundle on shipping. IT'S UPSABLE! like all our "DX" series. The computer optimized design allows full band coverage with good gain and front to back. Performance is excellent on both the CW and phone. Mechanically, CNC machined aluminum (6061-T6) ring clamps ground the elements to the boom and make assembly a snap. A hairpin type match couples the 3 kW 1: balun to the feed line. The antenna is completely DC grounded. The 12M4DX is also great for stacking, providing 3 dB increased gain not to mention the lower angle of radiation. The 12M4DX is a perfect stacking partner for our other "DX series Yagis like the 20M4DX and 10M4DX. Put the 12M4DX to the test in the new cycle!

12M4DX 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. It also works well to prevent the stainless nuts from galling on the bolt threads.

1. Refer to the Dimension Sheet. Note the different boom sections and the approximate position of each element. Slide the 2" RING CLAMPS into their approximate positions on the boom sections. For example, the rear boom section has two 2" ring clamps, one located at 1" from the rear end (with no boom assembly holes) and one about 11" from the swaged end. Note this section may have a 5/16" hole for an eyebolt - the other two 2" x 84" swaged sections are identical. Accurate positioning is unnecessary this point. Spread the ring clamp fingers with a flat blade screwdriver to ease movement on boom. Loosely add a 1/4-20 x 1" bolt and locknut to fingers of all clamps.

2. Assemble the boom using 1/4-20 x 2-1/2" bolts and locknuts. Tighten all joints. If possible lay the boom on a flat surface (cement floor or driveway). Start with the REFLECTOR ring clamp. Rotate it so its long flat surface is down and 1" from the end of the boom. If your boom has EYEBOLT HOLES, rotate the boom so the eyebolt holes are aligned straight up. Tighten the 1/4-20 x 1" bolt in the ring clamp locking the ring clamp in place. Now measure, mark and tighten the 3 remaining ring clamps in place. REFER TO THE DIMENSION SHEET FOR THE EXACT RING CLAMP / ELEMENT SPACING. Final alignment may be necessary when all the elements are installed on the RING CLAMPS. Now turn the boom over and place it on a table or workmate for element attachment.

3. DRIVEN ELEMENT ASSEMBLY: Select the two 3/4" x 5' (60") element sections with 2 small holes at the butt and attach the two short 1" x 12" swaged tubes using 8-32 x 1-1/4" screws and locknuts. Now locate the 2 x 4" balun mounting plate and drop 2 1/4-20 x 2" bolts through the outer holes. These same bolts then go on through the inner holes in the 7/8" x 15" CENTER FIBERGLASS INSULATOR ROD. Set this insulator/plate assembly on the DRIVEN ELEMENT ring clamp, sliding the extended bolts down through the holes in the ring clamp, add the nuts and tighten.

4. Slide a poly disc on each end of the fiberglass rod all the way down to the ring clamp. Mount the balun on the plate using the 2-1/2" U-bolt and cradle. Face the connector towards the Boom to mast plate. Position the balun so it's leads will reach out to the outer holes in the fiberglass rod insulator and tighten the U-bolt lightly.

5. Now slide the 1" element butts onto each side of the insulator and align the holes. Push a 1/4-20 x 2" bolt **UP** through one holes, add two machined HAIRPIN CLAMP BLOCKS face to face over the stud. Place a balun lug over the stud and add a locknut finger tight. Add the second bolt in the same fashion. The HAIRPIN TUBES ASSEMBLY will be added later.

6. PARASITIC ELEMENT ASSEMBLY: Pair up the remaining 3/4" x 60" element sections and 7/8" x 30" sleeves. Slide the 3/4" sections into the 7/8" sleeves. Align the holes and add the 1/4-20 x 1-3/4" bolts. Set this element assembly onto the ring clamp and add the nuts. Tighten securely until the 3/4" inner section is tight.

7. ELEMENT TIPS: Refer to the DIMENSION SHEET and install the tip pairs as shown. Secure with 5/8" compression clamps (SEE COMPRESSION CLAMP & TIP ASSEMBLY DETAIL) sheet.

8. Install the 5/16" x 4" Eyebolts into 5/16" holes in the rear and front boom sections. The boom to mast plate may be added loosely at this time as well.

12M4DX ASSEMBLY MANUAL

9. HAIRPIN ASSEMBLY: Place the HAIRPIN TUBES into the clamp blocks as shown on the DIMENSION SHEET. Rotate the tubes so the long sections are parallel. Flush the ends with the clamp blocks and tighten the clamp blocks down enough to hold this position. Install the 1/4-20 x 1/4" set screws into each end of the SHORTING BAR and slide the bar onto the tubes to the dimension shown on the DIMENSION SHEET. Insert a 1/4-20 x 2" bolt from the inside of the band clamp and attach the band clamp loosely on the boom below the shorting bar with the bolt sticking up. Slip the 3/8 x 1" spacer tube on the bolt and then allow the bolt to come up through the center hole in the shorting bar. Align the whole assembly, check the shorting bar position once more and tighten all hardware including the band clamp. THIS ASSEMBLY MATCHES THE ANTENNA IMPEDANCE AND DC GROUNDS THE DRIVEN ELEMENT FOR SOME STATIC AND LIGHTNING PROTECTION.

10. If possible, install the feedline cable at this time and route forward to center of boom. Secure with the nylon ties supplied (ties should be snug, but not crushing cable). Seal the balun connector with black tape, coax seal or equivalent.

11. Pick up the boom and mark the balance point. Center the BOOM TO MAST PLATE here, and secure with two 2" U-bolts, cradles, stainless lockwashers and nuts. Two 2" U-bolts are supplied for attaching the antenna to the mast and one more for the TURNBUCKLE PLATE.

12. To prepare the overhead guy system, begin by *temporarily* installing a 2" U-bolt through the TURNBUCKLE PLATE and into the top set of 2" U-bolt holes on the boom to mast plate. Add a couple of 5/16" nuts to hold in place. Unscrew turnbuckle eyes / hooks until only a thread or two shows inside the turnbuckle body and hook to turnbuckle plate.

13. Uncoil DACRON CORD. Secure one end to rear eyebolt, taking two turns through the eyebolt, then adding three TIGHT half-hitches. Pull hard on cord to set the knots. Repeat for the front eyebolt. Seal cord ends with heat (lighter, propane torch, etc) and tape to main line. Equalize cord length at turnbuckle plate and cut. Put two turns through rear turnbuckle eye, pull slack out of rope, and add three TIGHT half-hitches. Repeat for front cord section. Seal and tape cord ends.

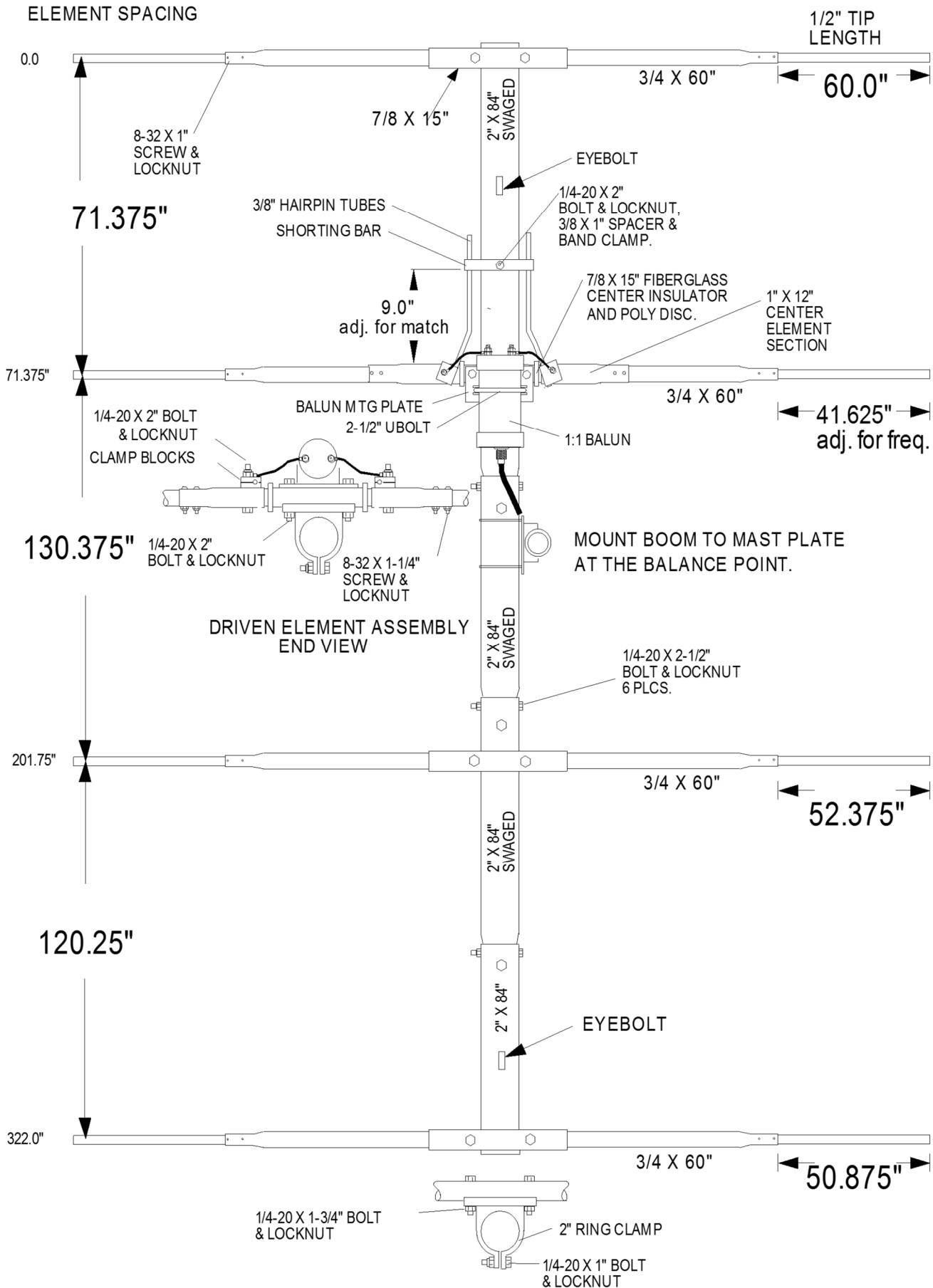
14. Both cords should now be fairly taut and parallel with boom. Disconnect the 2" U-bolt holding the turnbuckle plate and lift it up until the boom bows up slightly. This is approximately how high the plate will need to be mounted on the mast when the antenna is installed. During final installation on the tower / mast, secure the turnbuckle plate at the appropriate height with the 2" U-bolt. Then lean or pull on the cords to increase the tension and help the knots take their final "set." Make sure the knots are not slipping. When the guy system has taken a "set", loosen the 2" U-bolt and adjust turnbuckle plate height until boom is straight and level. Finer adjustments can be made at any time, if necessary, with the turnbuckles.

15. Check over the completed antenna and correct any minor misalignment. Also double check all hardware to be sure everything is tight and connectors are sealed. If possible before installing set the antenna up on a ladder or pole and run a preliminary VSWR check and a receiver check. Do all you can at this point to determine that the antenna is working properly before placing it in its final location.

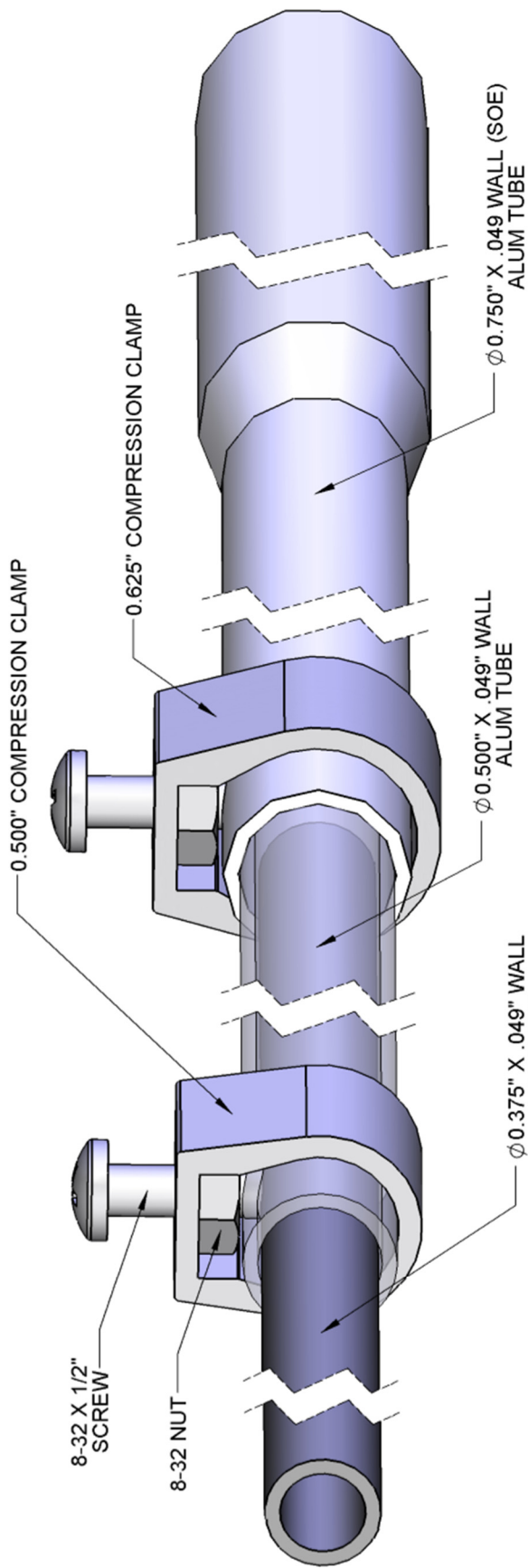
This completes the assembly. REMEMBER to support the feedline at the antenna boom and on the mast. Leave an adequate feedline loop for rotation around the tower. When stacking this antenna with other HF models, maintain at least 8' of separation; more if practical. Mount horizontally polarized VHF and UHF antennas at least 40" above or below this antenna to minimize interaction.

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12M4DX DIMENSION SHEET

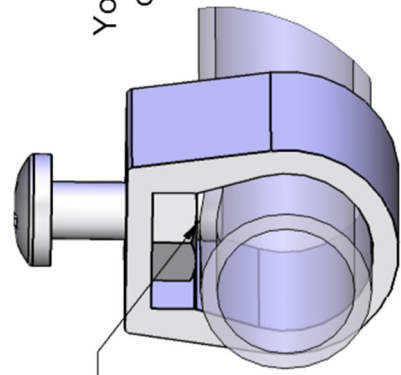


GENERIC COMPRESSION CLAMP DETAIL



NOTE:
TUBES SHOWN TRANSPARENT
TO SHOW MORE DETAIL

NOTE:
Generic layout to show
how compression clamps work.
Your antenna may have one or the other
or may even have both compression
clamp sizes.



NOTE:
8-32 X 1/2" SCREW
PRESSES ON INNER TUBE

NOTE: INSIDE TUBE NOT SHOWN FOR CLARITY

12M4DX PARTS & HARDWARE

DESCRIPTION	Qty
Boom section #1, 2" x 0.065 x 84" swaged one end.....	1
Boom section #2 & 3, 2" x 0.065 x 84" swaged one end	2
Boom section #4, 2" x 0.065 x 84" straight	1
Element section, center 1" x 0.058 X 12" swaged on end	2
D.E. Element section, 3/4" x .049 x 60" swaged on end.....	2
Element section, 3/4" x .049 x 60" swaged on end	6
Element tip, 1/2" x 0.049 x see Dimension Sheet.....	8
Sleeve, element, 7/8" x .058 x 15" (for 2" RC) (M2AMC).....	3
Boom to mast plate, 4" x 6" x .188" (M2APT0021)	1
Hairpin tube, 3/8 x .049 x 24" (M2A).....	2
Fiberglass insulator, 7/8" x 14.75" (M2APL00)	1
Balun, 1:1 3-30 MHz standard (M2ABL00)	1
Ring clamp, 2" (M2ACL	4
Dacron rope, 5/16" x 16'.....	1
Eyebolts, 5/16" x 4"	2
Turnbuckles, 5/16", hook & eye	2
Turnbuckle Plate, 2" x 4" x 3/16" (M2APT0101)	1
Compression clamp, 5/8"	8
U-bolt and cradle, 2 inch	5
Assembly Instructions	1
HARDWARE BAG	Qty
Nut, 5/16-18 ss.....	10
Lockwasher, split ring 5/16"	10
Bolt, 1/4-20 x 2-1/2" ss.....	6
Bolt, 1/4-20 x 2" ss	8
Bolt, 1/4-20 x 1" ss	4
Nut, 1/4-20 locking, ss.....	18
Screw, 8-32 x 1/2" ss.....	8
Screw, 8-32 x 1-1/4" ss	4
Nut, 8-32 locking, ss.....	4
Nut, 8-32, ss.....	8
Nylon tie, large black, 11".....	3
Zinc paste, 1 oz. cup	1
STANDARD HAIRPIN KIT BAG	
Plate, balun mtg., 2 x 4 x 1/8" alum (M2APT0).....	1
U-bolt, 2-1/2", balun mtg.	1
Clamp block, 1/4" x 1" x 1-1/4" (M2AMC0261)	4
Shorting bar, hairpin, 1/2 x 1/2 x 5" (M2ASB0262)	1
Poly disc, 7/8" hole (M2APL0011).....	2
Band Clamp, 1-1/2 to 2-1/2" #32, modified (M2ABC).....	1
Hair pin spacer, 3/8 x 0.049 x 1" tube, shorting bar standoff.....	1
Nut, 5/16-18 ss.....	2
Lockwasher, split ring 5/16"	2
Bolt, 1/4-20 x 2" ss	3
Nut, 1/4-20 locking, ss.....	3
Set screw 1/4-20 x 1/4" ss.....	2
ALLEN WRENCH 1/8"	1

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