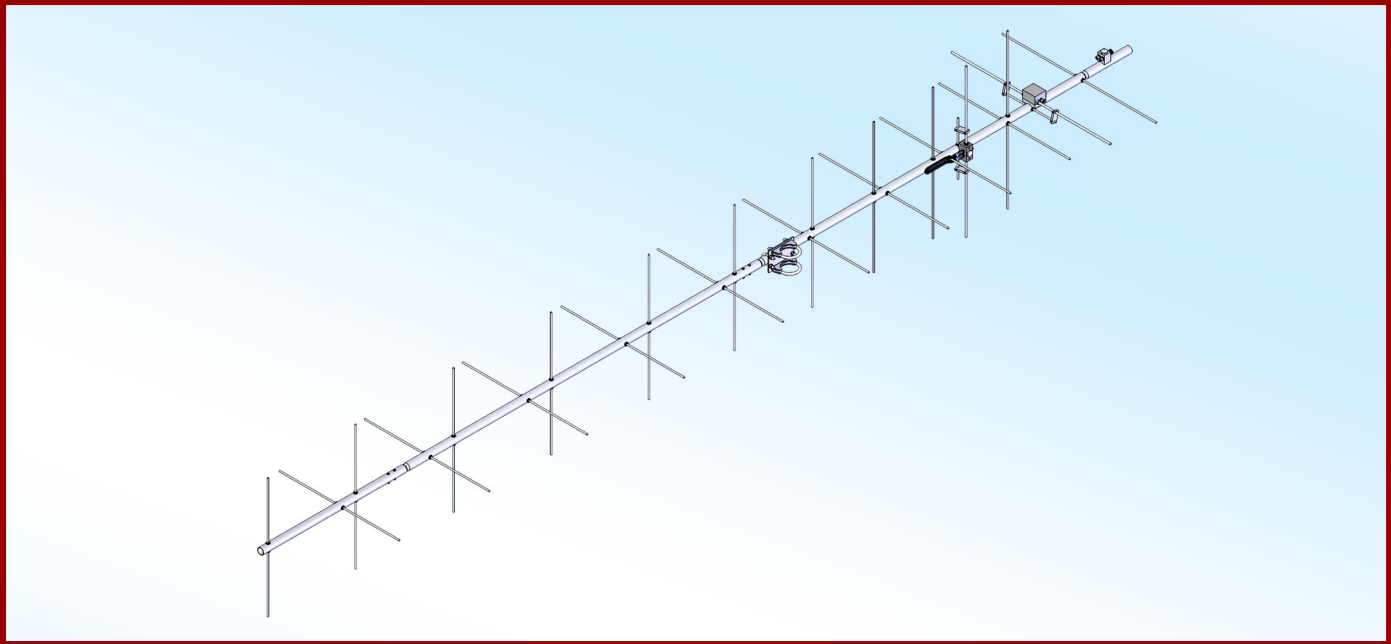




M2 Antenna Systems, Inc. Model No: 393CP18



SPECIFICATIONS:

Model	393CP18	Boom Length / Dia.....	80" / 1"
Frequency Range.....	389-396 MHz	Maximum Element Length.....	16"
*Gain	14.39 dBi	Turning Radius:	Call
Front to back	22 dB Typical	Stacking Distance.....	Call
Feed type	"T" Match	Mast Size.....	1-1/2" to 2" Nom.
Feed Impedance.....	50 Ohms Unbalanced	Wind area / Survival	1.0 Sq. Ft. / 100 MPH
Maximum VSWR.....	1.6:1 Typical	Weight / Ship Wt.....	7 Lbs. / 9 Lbs.
Input Connector.....	"N" Female		
Power Handling.....	1 kW		

***Subtract 2.14 from dBi for dBd**

FEATURES:

The 393CP18 is high performance circular polarized antenna with a remarkably clean pattern. The pattern is important in order to match the antenna's noise temperature with modern low noise preamps. This antenna is ideal for satellite work but is also excellent for terrestrial uses like ATV, repeater operation, and long haul tropo DX.

The CNC machined driven element module is O-ring sealed and weather tight for low maintenance and long-term peak performance. Internal connections are encapsulated in a space-age silicone gel that seals out moisture and improves power handling. The 3/16" 6061-T6 rod elements are centered to minimize interaction and maintain good ellipticity. Insulators are UV stabilized and locked in place with stainless keepers. Rugged construction, uncompromising performance for the boom length: that's the M² 393CP18 !

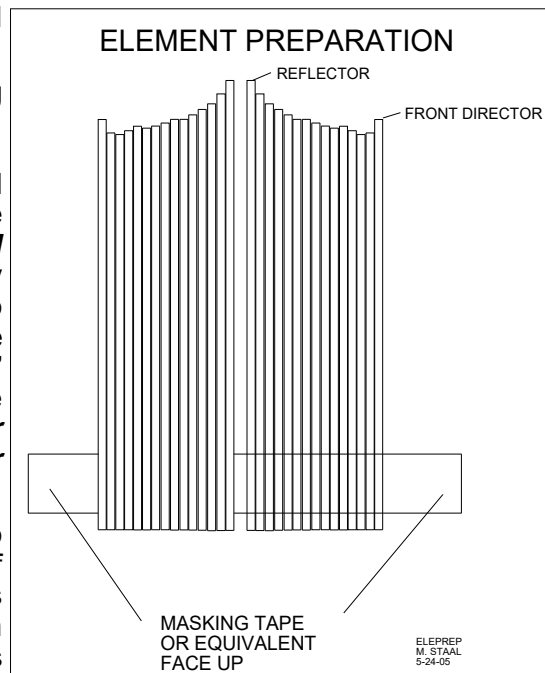
393CP18 ASSEMBLY MANUAL

TYPICAL TOOLS REQUIRED: measuring tape, phillips screwdriver, 5/16", 11/32, 7/16, and 1/2 spin-tite, end wrenches and / or sockets. Heavy duty models may require larger sizes.

1. Lay out the boom sections and assemble using the DIMENSION sheet as a guide for position and hardware.
2. Install the 8-32 x 1/4" set screw into each button insulator using the 3/32" Allen wrench supplied.

3. Cut a strip of masking tape about 6" long. Fold the ends under and stick the tape to a flat surface, sticky side up. Lay out the elements by length and position as shown ON the **DIMENSION SHEET**. Remove the REFLECTOR and find the rough center by balancing it across finger. Push on a black button insulator to about 1/2" from center. Insert the element through the holes at the rear of the boom and install the second button. 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 may 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 centered, tighten the set screw in the insulators on each side. After all are centered, sight down the antenna from the rear and compare tip symmetry. Look for any obvious discrepancies and correct if found. REPEAT THESE STEPS AND INSTALL THE OTHER PLANE OF ELEMENTS. NOTE THEY ARE SHIFTED FORWARD ON THE BOOM BY 1/4 WAVELENGTH.



5. Mount the special REAR DRIVEN / POLARITY SWITCH FEED BLOCK to the boom using two (2) 8-32 X 1-1/4" screws. Orient with feed and balun connectors as shown on the Dimension Sheet. The 'T' block unit mounts just behind the rear REFLECTOR element with one more 8-32 x 1-1/4" screw
7. Thread a 3/8" SEAL-NUT fully onto each 'F' connector on each block, with black Neoprene side facing out. Generally the balun is installed in one loop. Attach balun to the block connectors and tighten **gently** using a 7/16" end wrench. The two medium length cables are the 1/2 wave baluns. Then back the Seal Nuts out and finger-tighten firmly up against the face of the connectors (or tighten **gently** with 1/2" end wrench). Later, after the phasing lines are installed form the balun coax and phasing lines close to the boom and secure with cable ties (snug but not crushing or kinking the coax).
8. Install the 8-32 x 1/4" set screws (using the 3/32" Allen) wrench into the SHORTING BARS. Slide the bars onto the 3/16" rod driven element tips and the 1/8" Feed Block Rods. Position the Shorting Bars as specified on the DIMENSION SHEET: the distance given is between the outer face of the Feed Block and the inner face of the Shorting Bar. Align the bars and rods with each other and tighten the sets crews. NOTE: the shorting bar dimensions may be different on the OPTIONAL circular switched driven element.
9. Now attach the phasing cables. The long, 3/4 wavelength coax cable goes to the the front driven element. And the short cable goes to the rear driven element. Tighten the connectors lightly with a 7/16" end wrench and then run the seal nut up against the face to the connector and tighten just one turn past finger tight with a 1/2" end wrench.
10. Route the cables close to the boom and avoid crossing or touching the element butts to minimize detuning. This is a critical area if the antenna match is to be preserved. Because the cables can couple into the field of each element set, it is important to route the cables as shown and use the cable ties provided to keep the cables tight against the boom. THIS COMPLETES THE ANTENNA ASSEMBLY.

393CP18 ASSEMBLY MANUAL

OPTIONAL MANUAL AZ-EL SYSTEM ASSEMBLY

1. Connect the two MAST CLAMPS SHELLS together loosely with four (4) 1/4-20 x 3/4" bolts.
2. Attach the mast clamps to the "TACO SHELL" ELEVATION U BRACKET using two (2) more 1/4- 20 x 3/4" bolts. Add two more 1/4-20 x 3/4 bolts, lock washers and flat washers to control the elevation tilt angle.
3. Secure THE SPECIAL 3" X 8" X 1/4" PLATE to the elevation tilt bracket with two 1/4-20 X 3/4" BOLTS Then add 2 SETS OF 1" SADDLES and loosely attach with 1/4-20 x 1-1/2" bolts and locknuts.
4. Mount the AZ-EL assembly on the top of the PORTABLE FOLDING STAND and tighten the mast clamp bolts. Now insert the rear of the antenna boom into the saddles to about 3" behind the reflector, orient the antenna so the rear set of elements are horizontal and tighten the saddle bolts.

GENERAL GUIDELINES

For optimum performance, mount antenna high and in the clear. **Always** use high quality coax and connectors. Old, corroded, or poor quality materials can SERIOUSLY affect VSWR, gain, and pattern. If possible, test the antenna, connectors and feedline BEFORE installation. At 6' in height, the antenna will exhibit performance **approaching** the specifications. If it doesn't, check feedline and connectors for continuity and shorts. Check antenna shorting bars, element placement and length, against Dimension Sheet.

Rear mounted antennas can generally be mounted in any polarization to any type of mast, conductive or non-conductive.

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393CP18 PARTS LIST

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6-29-05

DESCRIPTION	QTY
BOOM SECTION #1, 1 X .058 X 54"	1
BOOM SECTION #2, 1X .058 X 54" SOE TFS*	1
ELEMENT, 3/16" ROD X SEE DIM" SHEET	18
DRIVEN ELEMENT ASSEMBLY,	2
"T" BLOCK ASSEMBLY	1
BALUN CABLE , 1/2 WAVE RG-6U	2
PHASE LINE, LONG, 3/4 WAVE RG-6U.....	1
PHASE LING, SHORT, 1/4 WAVE RG-6U.....	1
ASSEMBLY MANUAL.....	1

IN HARDWARE BAG:

SHORTING BAR, 1/8 AND 3/16 HOLES.....	4
BUTTON INSULATORS, SPECIAL FOR SET SCREW...36	
SCREW, 8-32 X 1-1/4 SS	4
SET SCREW, 8-32 X 1/4, SS	44
LOCKNUT, 8-32 SS	2
SEAL NUTS, 3/8-32	5
CABLE TIE, NYLON	5
ALLEN HEAD WRENCH, 5/64"	1

*TFS = TO FIT ITSELF

OPTIONAL CIRCULARITY SWITCH PART LIST

DESCRIPTION	QTY
DRIVEN ELEMENT / POLARITY SWITCH ASSEMBLY.....	1
SCREW, 8-32 X 1-1/4" , SS.....	2
SEAL NUT, 3/8 X 32, GOLD	3

OPTIONAL AZ-EL MOUNTING SYSTEM

DESCRIPTION	QTY
MAST CLAMP HALF.....	2
ELEVATION U BRACKET (TACO SHELL)	1
COUNTERWEIGHT, 3-1/4" X 1-1/2" 4 LB.....	1
PLATE, 3 X 8 X 1/4" ALUM.....	1
SADDLE, 1"	4
BOLT, 1/4-20 X 4", SS	1
BOLT, 1/4-20 X 1-3/4, SS	4
BOLT, 1/4-20 X 1-1/2", SS.....	4
BOLT, 1/4-20 X 3/4"	4
BOLT, 1/4-20 X 3/4 FLATHEAD	3
LOCKNUT, 1/4-20, SS.....	5
FLAT WASHER, 1/4", SS	2
LOCK WASHER, 1/4" SPLIT RING , SS	2

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