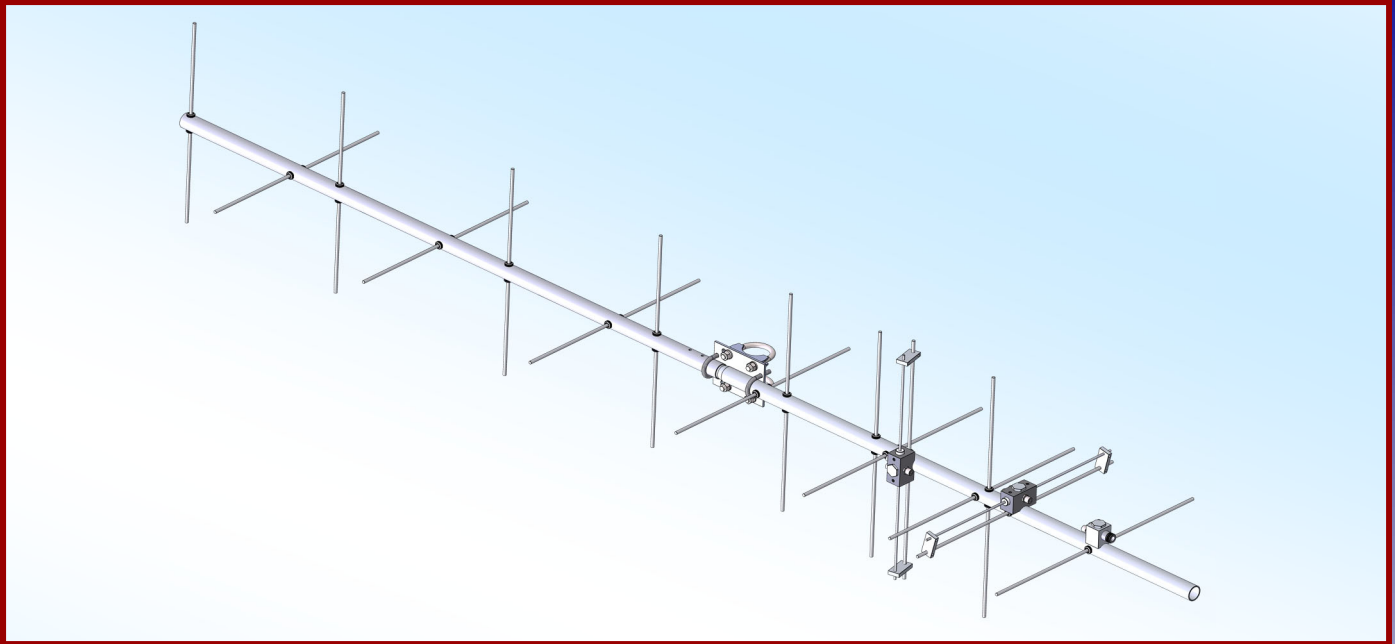




M2 Antenna Systems, Inc. Model No: 126CP16



SPECIFICATIONS:

Model	126CP16	Power Handling.....	1.5 kW
Frequency Range	121.75 To 130.20 MHz	Boom Length / Dia	193" / 1"
*Gain	13.36 dBic	Maximum Element Length	48"
Front to back.....	16 dB Typical	Turning Radius:.....	Call
Feed type	"T" Match	Stacking Distance	H 121" / W 121"
Feed Impedance.....	50 Ohms Unbalanced	Mast Size	1-1/2" to 2" Nom.
Maximum VSWR	1.6:1	Wind area / Survival.....	1.0 Sq. Ft. / 100MPH
Input Connector	"N" Female	Weight / Ship Wt.	7 Lbs. / 9 Lbs.

***Subtract 2.14 from dBi for dBd**

FEATURES:

The 126CP16 is high performance, wideband, 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 when a circular pattern is desired. The 126CP16 is shown fixed in RHCP but can be ordered with or without a polarity switch.

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 126CP16!

126CP16 ASSEMBLY MANUAL

TOOL REQUIRED FOR ASSEMBLY: screwdriver, 11/32 nut driver or wrench, 7/16" and 1/2" end wrenches and sockets, measuring tape.

1. Lay out the boom sections and assemble using the DIMENSION sheet as a guide for position and hardware.

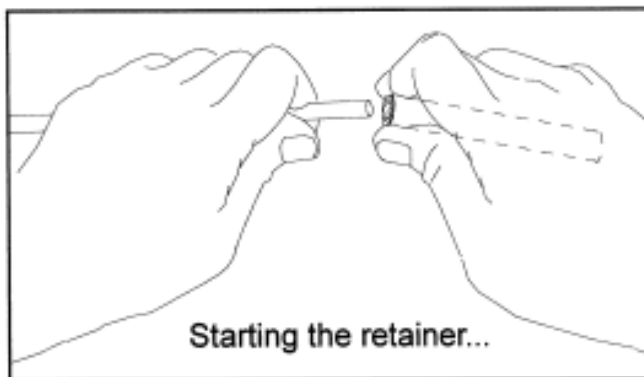
ASSEMBLING THE HORIZONTAL ELEMENTS

2. Separate elements by length into two identical sets, "H" and "V". Lay out the "H" elements by length and position as shown the DIMENSION SHEET. Find rough center of the reflector (longest) element by balancing it across finger. Push on a black button insulator to about 3/4" from center. Insert the element through the holes at the rear of the boom and install the second button. Install the 3/8" tube 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.**

3. 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.

4. Stainless steel SHAFT RETAINERS are used for securing the elements and insulators. Always use them for permanent and long term antenna installations. For most portable or temporary use, the button insulators are satisfactory and the retainers may be left off.

5. Use thumb and index finger to hold a Shaft Retainer over end of the 3" push tube (internal fingers dished into tube). Hold the element firmly and start the keeper onto the tube by applying pressure with the push tube. Push the Shaft Retainer down element until 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 elements are locked in place.



6. Mount the **HORIZONTAL FEED BLOCK INSULATOR/ ROD ASSEMBLY** to the boom. using a single 8-32 X 1-1/2" screw. Now add the 3/8 tube element halves and secure with 8-32 x 1" screw and a non locking nut. Now mount the 1:1 balun with the connector facing the rear. Secure with the second 8-32 lock nut on each side.
7. Insert the 1" x 12" SOE boom extension at the rear of the boom. Using the same 8-32 x 1-1/4" screw, mount the "T" JUNCTION BLOCK. .

ASSEMBLING THE VERTICAL ELEMENTS

8. Repeat steps #2 through #5 for the Vertical elements, using the Dimension Sheet as your guide to lengths and spacing.
9. **NOTE: INSTALLATION OF THE VERTICAL FEED BLOCK DETERMINES THE CIRCULARITY OF THIS ANTENNA. THE ORIENTATION OF THE BLOCK FOR RIGHT HAND CIRCULARITY IS SHOWN ON THE DIMENSION SHEET DRAWING.** Once the vertical set of elements are in place and the driven element tubes mounted as in the horizontal set, attach the second 1:1 balun with the extra 1/4 wave of RG-303 coax. Route the coax as shown. This extra section is required to generate a 90 degree phase shift required when both set of elements are essentially in the same plane.

126CP16 ASSEMBLY MANUAL

10. Thread 3/8" SEAL NUTS fully onto all small 'F' female connectors with the black Neoprene side facing out. Attach the RG-6U 1/4 wave matching lines as shown. Secure the cables with the nylon ties provided. Ties should be snug but not crushing the coax. Tighten the connectors **gently** using a 7/16" end wrench. Then run the Seal Nuts up against the male connector face and tighten **gently** with 1/2" end wrench). A lot of torque is unnecessary.
11. Insert the U-clips for the overhead support system, into the antenna boom as shown and secure with 3/16" stainless shaft retainers. Next, mount the small welded plate and 1/2 x 2" tube at about 72" in front of the horizontal reflector. Secure it with one 1" ubolt and locknuts. Add the 3/8 x 9" fiberglass extension. Tie one end of the 3/32" black dacron cord to the rear U-clip and route it forward through the top delrin cap on the fiberglass rod. Now route the cord through the front U-clip and pull the cord tight until the boom is straight. Secure with another knot at the front clip.
12. The boom to mast plate or 'T' bracket is normally mounted to the boom at the balance point (with feedline or equivalent attached). Use two stainless band clamps to attach the antenna boom to the vertical riser on the 'H' frame. Holes have been provided in the 'T' bracket if it is desired to bolt the boom to the 'T' bracket once the correct mounting point has been determined.
THIS COMPLETES THE ANTENNA ASSEMBLY.
13. Use good quality coax and "N" connector for your feedline. M² can highly recommend the new TIMES MICROWAVE CABLE LMR400. It is the lowest loss, the most impervious to water, and most important for this application, it **WEIGHS** just over 1/3 of other RG-8 or RG-213 type cables. Secure feed coax near connector on Junction Block, to provide stress relief, route the cable down to the cable support tube on the 'H' frame. **Do not route feedline to boom to mast plate as exiting antenna here will adversely affect circular field.**

126CP16 ASSEMBLY MANUAL

126CP16 PARTS LIST

3-9-04

DESCRIPTION	QTY
BOOM SECTION, 1 X .058 X 60" SOE	1
BOOM SECTION, 1 X .058 X 60" SOE.....	1
BOOM SECTION, 1 X .058 X 60" SOE.....	1
BOOM SECTION, 1 X .058 X 12.25"	1
REAR BOOM EXTENSION, 1" X .058 X 12.0....	1
ELEMENT DRIVEN, 3/8 X 21.50	4
ELEMENTS, 3/16 ROD x see Dim. Sheet.....	14
DRIVEN ELEMENT INSULATOR, DELRIN	2
'T' JUNCTION BLOCK.....	1
PHASING CABLE, 1/4 WL RG-6U	2
SUPPORT LINE, 3/32 DACRON X 156"	1
ASSEMBLY MANUAL.....	1
IN HARDWARE BAG:	
U-CLIPS, 3/16" ROD, FORMED	2
BUTTON INSULATOR, 3/16"	28
SHAFT RETAINER, 3/16" SS	32
SCREW, 8-32 X 1-1/2" SS.....	2
SCREW, 8-32 X 1-1/4" SS.....	8
SCREW, 8-32 X 1" SS.....	4
LOCKNUT, 8-32 SS.....	13
NUT, 8-32, SS	4
BALUN, 1:1 COAXIAL	1
BALUN + PHASE LINE RG-303 18"	1
CABLE TIE, NYLON	6
SEAL NUTS.....	4
PUSH TUBE, 3"	1

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