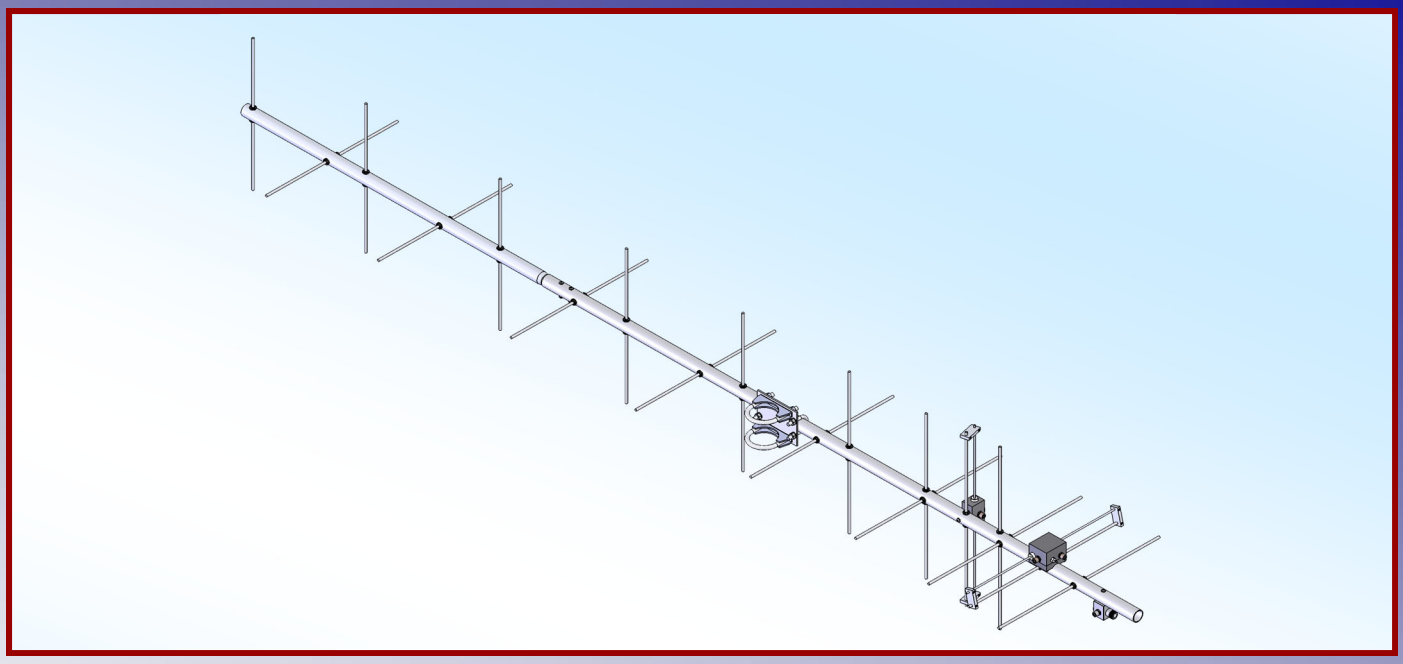
M2 Antenna Systems, Inc.
Model No: 348CP18



SPECIFICATIONS:

Model	348CP18
Frequency Range	344 To 351 MHz
*Gain	14.15 dBic
Front to back	19 dB Typical
Feed type	“T” Match
Feed Impedance.	50 Ohms Unbalanced
Maximum VSWR	1.5:1
Input Connector	“N” Female
Power Handling	1.5 kW
Boom Length / Dia	82” / 1”
Maximum Element Length	17”
Turning Radius:	Call
Stacking Distance	Call
Mast Size	1-1/2” to 2” Nom.
Wind area / Survival	0.5 Sq. Ft. / 100MPH
Weight / Ship Wt.	6 Lbs. / 8 Lbs.

***Subtract 2.14 from dBi for dBd**

FEATURES:

The 348CP18 is a 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.

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.

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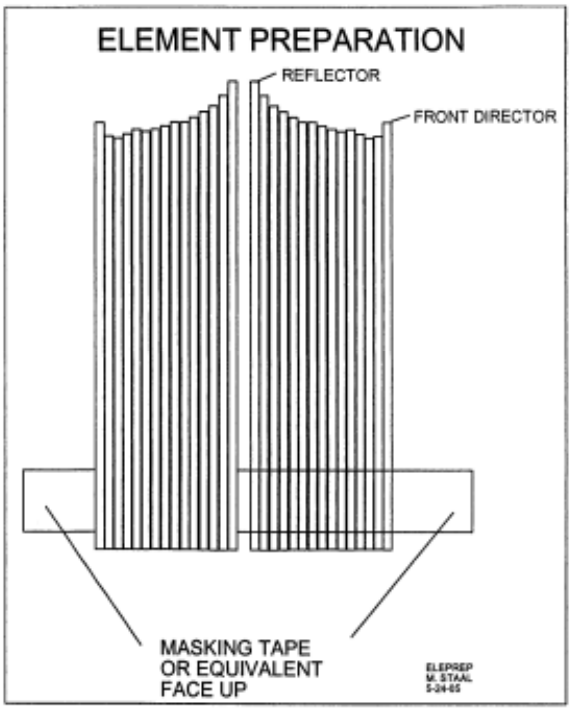
348CP18 ASSEMBLY MANUAL

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. Layout 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. Layout 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 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” screws.

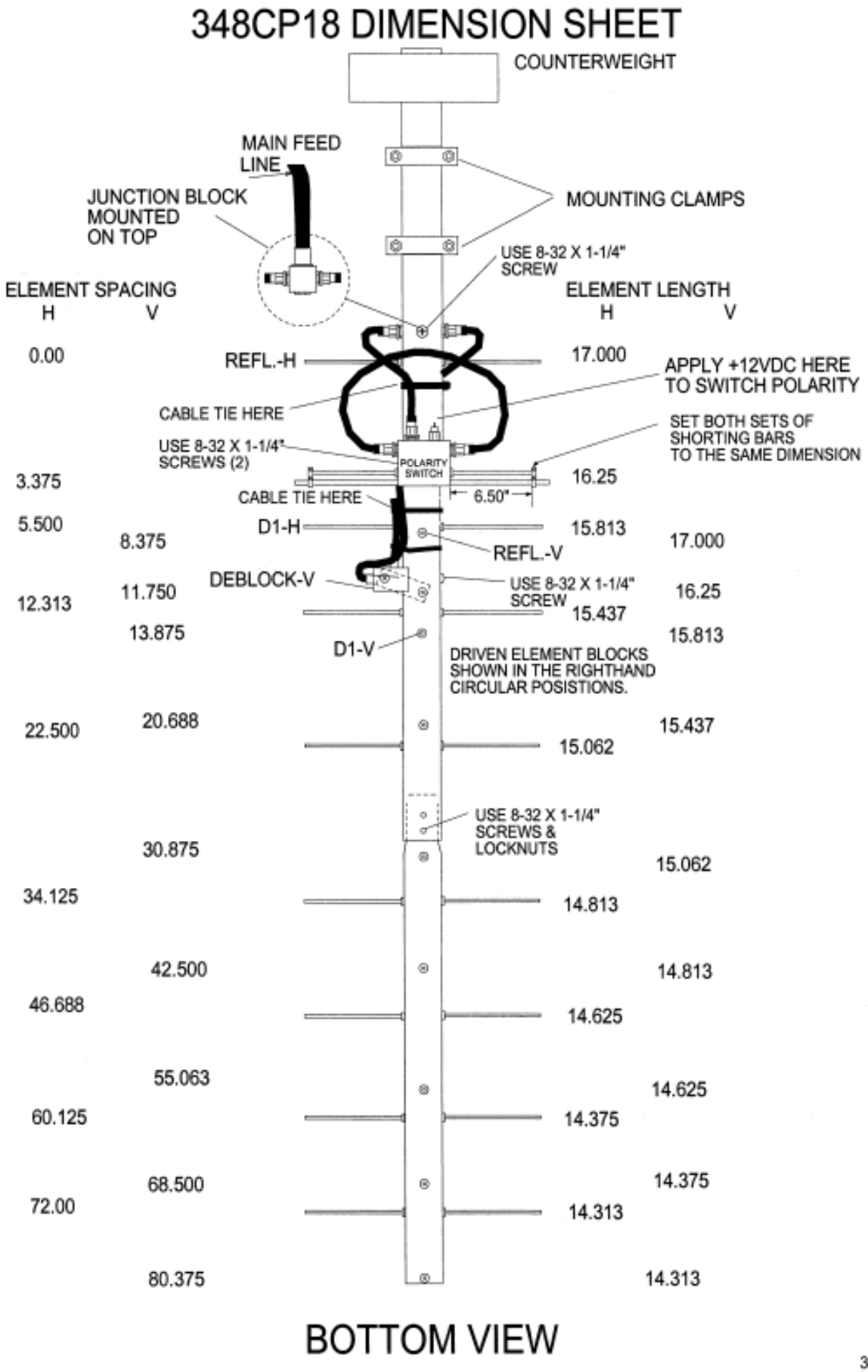
6. Thread a 3/8” seal nut fully onto each “F” connector on each block, with black Neoprene side facing out. Generally the balun is installed in one loop. Attach balun to the block connectors and tighten gently using a 7/16” end wrench. The two medium length cables are the 1/2 wave baluns. Then back the 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).

7. 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 a 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 set screws. NOTE: the shorting bar dimensions may be different on the OPTIONAL circular switched driven element.

8. Now attach the phasing cables. The long, 3/4 wavelength coax cable goes to 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 a1/2” end wrench.

9. 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

348CP18 DIMENSION SHEET



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348CP18 DIMENSION SHEET

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 t 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.

348CP18 PARTS & HARDWARE

348CP18 PARTS LIST

DESCRIPTION	QTY
BOOM SECTION # 1, 1” X 0.058 X 54”	1
BOOM SECTION # 2, 1” X 0.058 X 54” SOE TFS	1
ELEMENTS, 3/16 ROD x DIM SHEET	18
DRIVEN ELEMENT ASSEMBLY	2
BALUN FOR D.E. ASSEMBLY, (RG-6)	2
PHASE LINE, 1/4 WAVE (RG-6)	1
PHASE LINE, 3/4 WAVE (RG-6)	1
JUNCTION BLOCK ASSEMBLY (SADE0065)	1
BOOM-TO-MAST PLATE, 3 X 4 X .125" (M2APT0019)	1
SHORTING BAR, 1/4” X 3/4” (M2ASB0080)	4
U-BOLT & CRADLE, 2”	2
U-BOLT, 1"	2
ZIP TIE, (MEDIUM)	5
PENETROX / ZINC PASTE CUP	1
ASSEMBLY MANUAL	1

HARDWARE

BUTTON INSULATORS	36
SHAFT RETAINER, SS	36
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
SETSCREW, 8-32 X 1/4, SS	8
SEAL NUTS, 3/8-32	8
ALLEN HEAD WRENCH, 5/64”	1
PUSH TUBE, 3/8 X 3”	1

*TFS=TO FIT ITSELF

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, 1/4” X 3” X 8”	1
SADDLE, 1”	4
BOLT, 1/4-20 X 1-3/4” SS	4
BOLT, 1/4-20 X 4” SS	1
BOLT, 1/4-20 X 1-1/2” SS	4
BOLT, 1/4-20 X 3/4” SS	4
BOLT, 1/4-20 X 3/4” FLATHEAD SS	3
LOCKNUT, 1/4-20 SS	2
LOCK WASHER, 1/4” SPLIT RING SS	2

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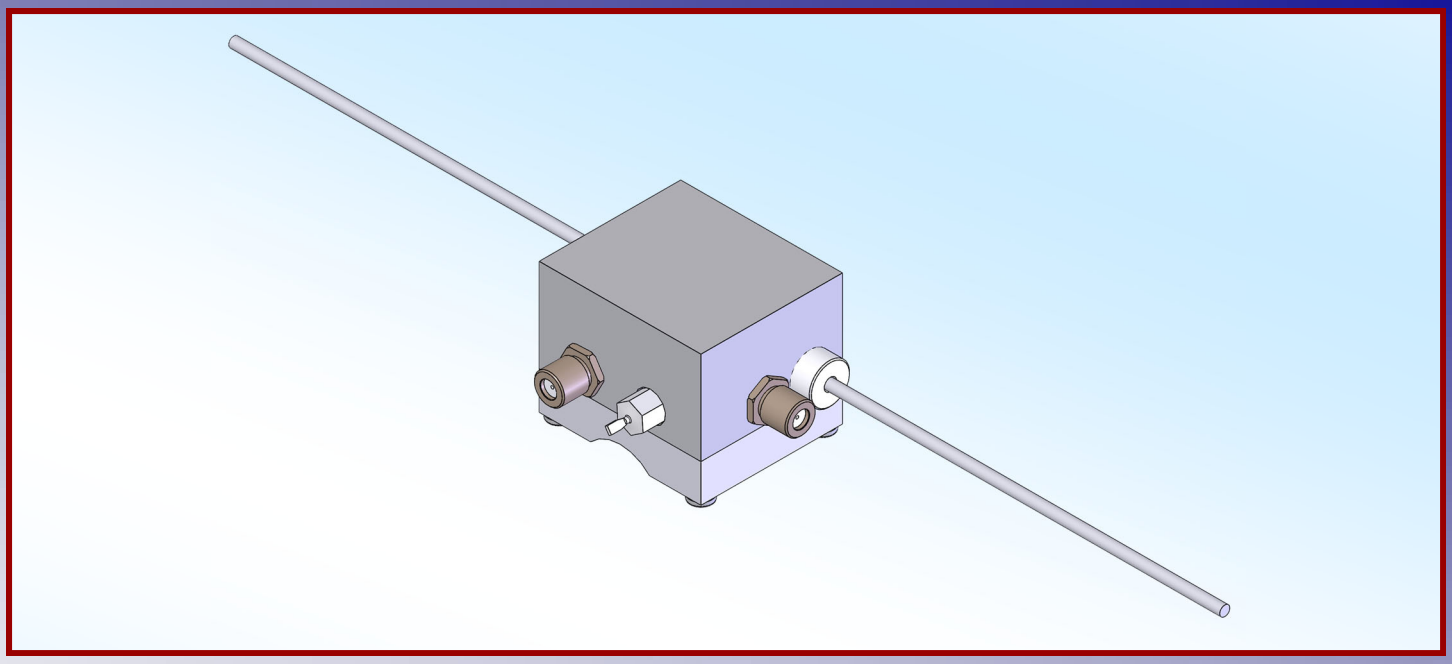
M2 Antenna Systems, Inc.
Model No: PS365-70CM



SPECIFICATIONS:

Model	PS365-70CM
Frequency Range	300 to 500 MHz
Isolation, 2M / 440	50 dB / 40dB
Feed Impedance.	50 Ohms Unbalanced
VSWR	1.2:1 or better
Connectors	"F" Females
Ins. Loss, 2M / 440	0.1 / 0.2 dB
Switch Time, In / Out	20ms / 15ms
Power Handling 2M / 440	200 W / 150 W
DC power req.	12 VDC @ 80mA
Block size / Rod Dia	2" X 2" X 1-1/4" / 1/4"
Maximum Element Length	16"
Operating Temp range	-50°c to 150°c
Weight / Ship Wt.	2.0 Lbs. / 4 Lbs.

***Subtract 2.14 from dBi for dBd**

FEATURES:

The PS365-70CM polarity switch kit is designed to work with any M2 circular polarized antenna. It allow instantaneous selection of right or left hand circularity. Originally designed for Nasa for many of their 100 to 500 MHz satellite and space craft applications, the PS365-70CM is now used by many amateur VHF enthusiasts to performance flexibility to both terrestrial and satellite applications.

The heart of the unit is a small, low loss coaxial switch carefully designed into the driven element block. Only one driven element block PS365-70CM is required to achieve full right hand and left hand selection. There are no frequency sensitive elements in the block assembly so the PS365-70CM or its UHF equivalent can be used on most M2 CP antenna from 100 to 500 MHz. The PS365-70CM can handle 250W of continuous RF transmission power. Losses are less than 0.2 dB.

Installation is easy and involves only the removal of one of the original Driven Element assemblies and then mounting the PS365-70CM in its place.

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