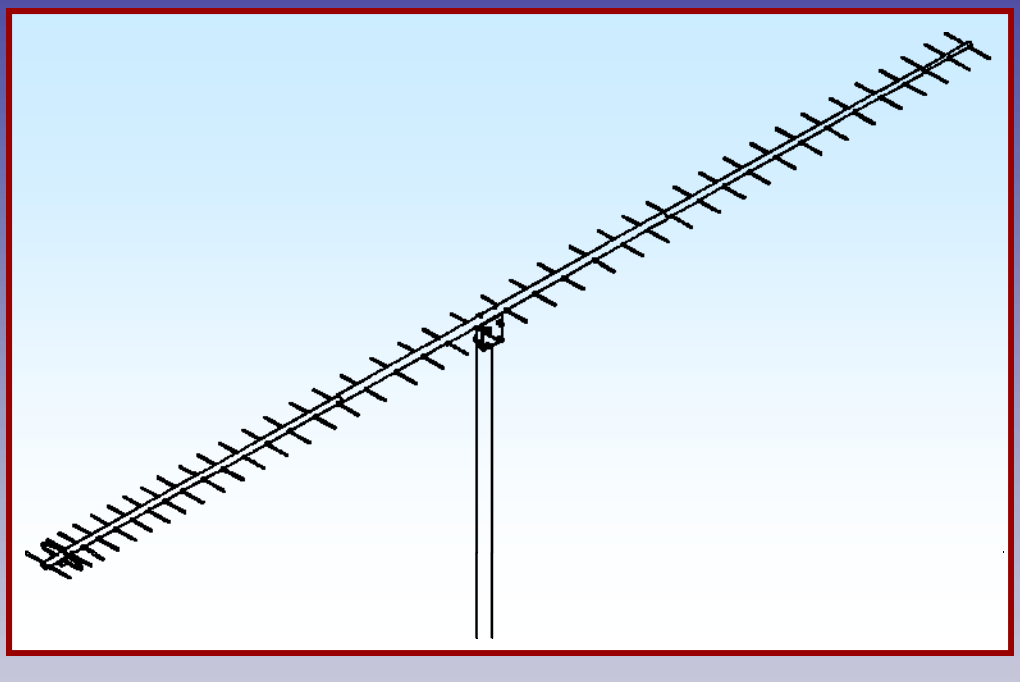
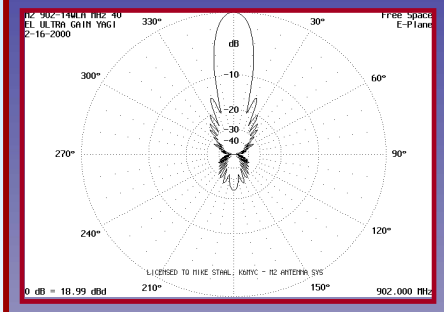
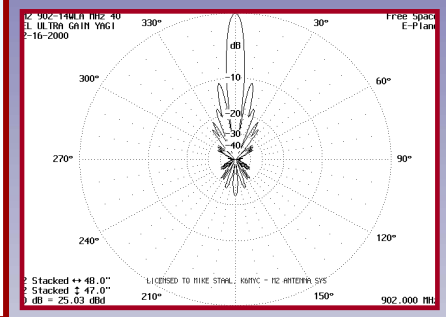
M2 Antenna Systems, Inc.
Model No: 902-14WLC







SPECIFICATIONS:

Model	902-14WLC
Frequency Range	880 To 915 MHz
*Gain	21.14 dBi
Front to back	24 dB Typical
Beamwidth	E=18° H=19°
Feed type	Folded Dipole
Feed Impedance.	50 Ohms Unbalanced
Maximum VSWR	1.2:2 Typical at 902
Input Connector	"N" Female

Power Handling	750 Watts
Boom Length / Dia	15' 4" / 1", 1-1/4" & 3/4"
Maximum Element Length	6-3/8"
Turning Radius:	100"
Stacking Distance	43" High & 43" Wide
Mast Size	1-1/2" to 2" Nom.
Wind area / Survival	1 Sq. Ft. / 100 MPH
Weight / Ship Wt.	6 Lbs. / 7 Lbs.

***Subtract 2.14 from dBi for dBd**

FEATURES:

The 902-14WL is the ultimate in performance and gain. The recently updated computer optimized design produces excellent gain and VSWR across the band. It is ideal for stacking: a quad array will yield almost 25 dBd of real smoking antenna gain. Tropo and EME should definitely be on your mind when owning one or more 902-14WLs! Structurally the antenna is rugged, tapered-boom construction featuring 3/16 rod parasitics. A totally weather proof driven dipole design means years of trouble free optimum performance. This antenna is a perfect compliment to your VHF-UHF antenna system!

M2 Antenna Systems, Inc. 4402 N. Selland Ave. Fresno, CA 93722
Tel: (559) 432-8873 Fax: (559) 432-3059 Web: www.m2inc.com

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902-14WLC ASSEMBLY MANUAL

1. Assemble the boom sections using the DIMENSION sheet as a guide for lengths, placement and hardware.

2. Mount the FOLDED DIPOLE MOUNTING BLOCK to the small hole about 2-1/4" from the rear of the boom. Orient with the feed connector facing to the front. Secure the block with an 8-32 x 1-1/4" screw.

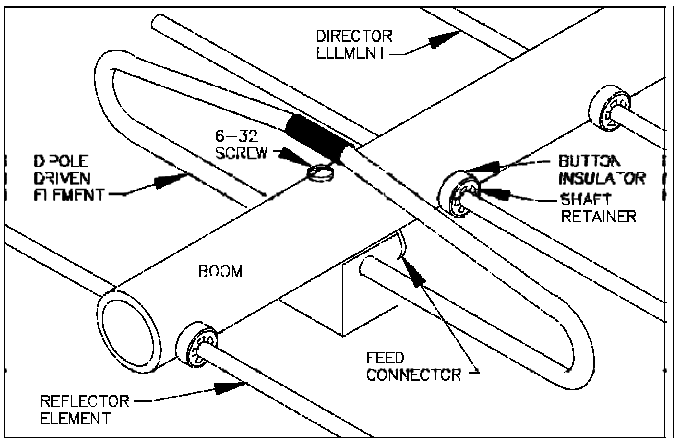
3. Sort out the 3/16" rod elements using the 'SETUP' sheet and the DIMENSION SHEET. Measure carefully as lengths vary by as little as 1/16". ***Note that the Director Elements do not necessarily diminish in length from rear to front.***

4. Install elements, starting with the REFLECTOR element. Push on a black button insulator to about 1/2" from center and insert the element through the holes 1/2" from the rear of the boom. Install the second button, snugging it up into boom. **HINT: If the rods are loose in the buttons, deform the buttons slightly first with pliers.** DO NOT BOTHER WITH ACCURATELY CENTERING the element at this time and DO NOT INSTALL the stainless steel SHAFT RETAINERS yet. This is easier to do after all the elements are installed in the boom.
   Install the 3/16" rod DIRECTOR element as you did the reflector. Then continue with the installation of the DIRECTORS.

5. Now begin centering the elements. Use a tape measure to EQUALIZE the amount the element sticking out on each side of the boom. Accuracy of 1/32" is adequate. 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.

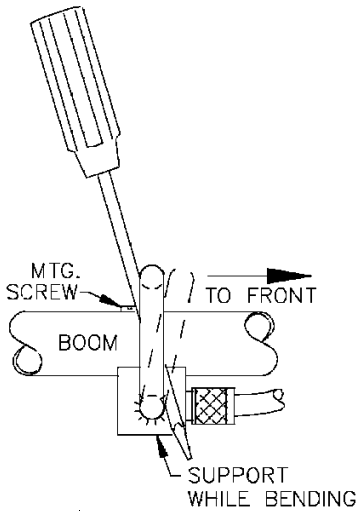
6. NOTE: The SHAFT RETAINERS, used for securing the elements, should always be used for permanent and long term antenna installations. For portable or temporary use, or whenever it is anticipated that the antenna will be disassembled within a short time, the retainers may be left off. The button insulators are normally a tight fit, but if not can be squeezed a bit hold the elements quite securely.
   HINT: Keeper installation is easier, by chamfering the inner diameter of push tube.
   Begin installing the stainless shaft retainers (***KEEPERS***). Use thumb and index finger to hold a Shaft Retainer over end of the 3/8 x 3" push tube (Shaft Retainer dished into tube). Hold the element firmly and start the keeper onto the rod by applying pressure with the ***3/8 X 3" PUSH TUBE***. Push the Shaft Retainer until up tight against the button insulator (Locking pliers, ***lightly*** clamped up against opposite button insulator will help maintain center reference. If you push the first retainer too far, remove element from boom, push retainer completely off the element, and start over. After the first retainer is on, install another retainer to the opposite side. Continue installing Shaft Retainers until all elements are locked in place.

7. Attach the angled Boom to mast plate to the small holes about 74" and 77" from the rear of the boom. Secure with 8-32 x 1-3/4" screws and locknuts. 1-1/2" and 2" U-bolts are supplied for attaching bracket to end of mast. Keep mast as far from boom as the U-bolts allow. Do not allow the mast to pass up through the element plane as it **WILL CAUSE GREAT PERFORMANCE DEGRADATION**.



8. Attach the feedline and route forward to the mast. Secure at regular intervals with cable ties. If using hardline, provide support near the feed connector to relieve any stress on the dipole block mounting screw and connector.

9. GENERAL COMMENTS. It is always a good idea to check out the antenna with a little RF prior to installing it in some inaccessible location. DO NOT use any PL-259 fittings or adapters at these frequencies. Very small problems in coax and in connectors can cause MAJOR VSWR problems. Even a loose connector will affect the VSWR noticeably.



VSWR ADJUSTMENT:

We have found the best VSWR across the band is found when the dipole is straight up as shown, Occasionally the VSWR can be improved slightly by tilting the dipole forward or back just a bit. If you do not have very good measurement equipment, we suggest you not change the tilt. Typically the match is 1.2 to 1.4 from below 900 to above 926 MHz. One side of the dipole is 1/4," tubing; the other is solid rod and will require more effort to bend. Start with the soft side, bending it slightly one way or the other. If improvement is noted, THEN do the same to the solid rod side. **BE SURE TO SUPPORT THE BLOCK SO AS NOT TO PUT UNDUE STRESS ON THE MOUNTING SCREW.**

VSWR may be adjusted slightly for improvement in your particular part of the band by slightly bending the unsupported upper loop of the driven element towards, or away from, the first director. This can be done with a screwdriver tip As shown. ***Bend in small increments to avoid damage to internal balun and connections at the center of the dipole. Hold the block firmly to the boom- bending the dipole FORWARD tends to pry the block away from the boom.*** Check after each adjustment and note shift in the VSWR curve.

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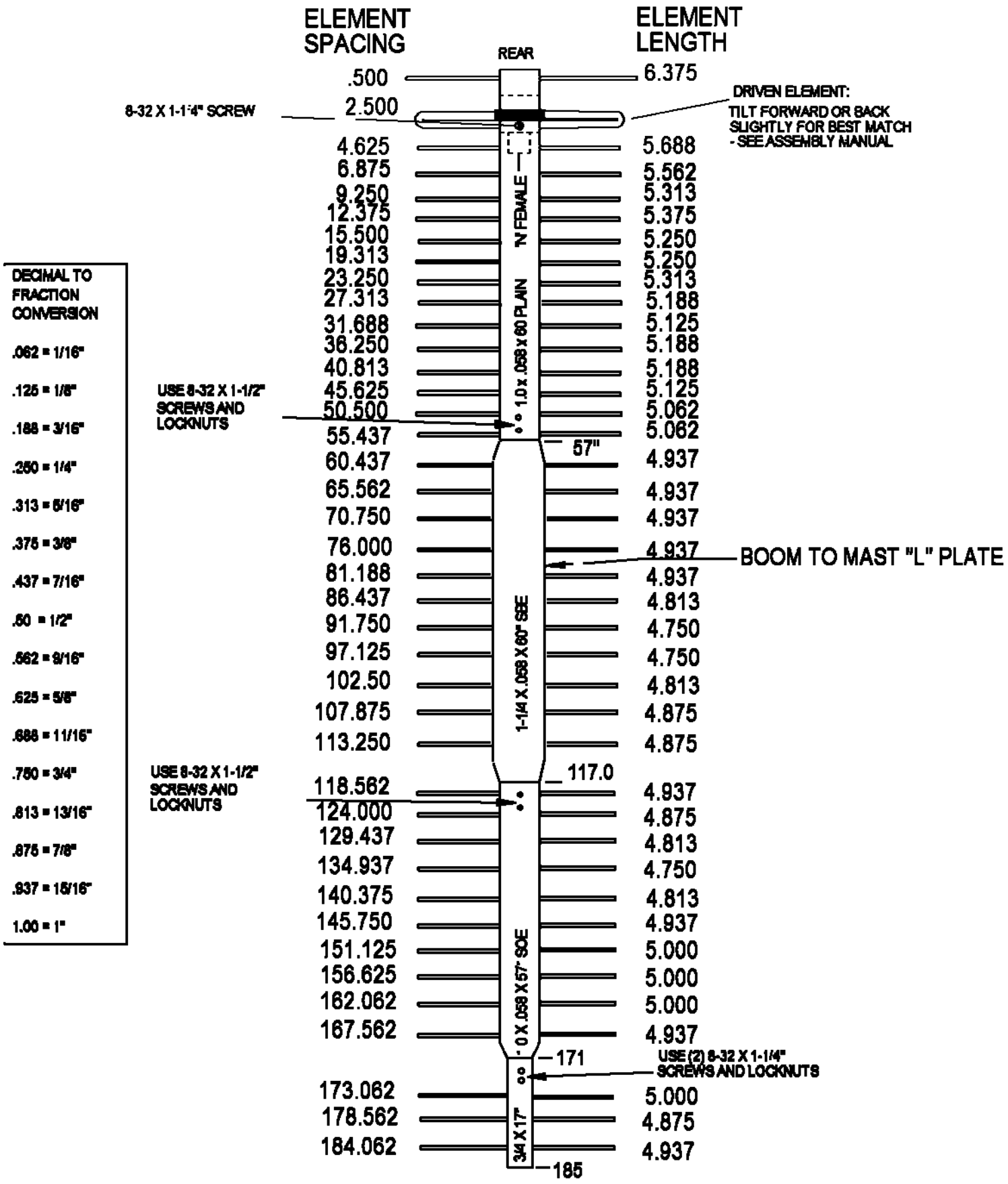
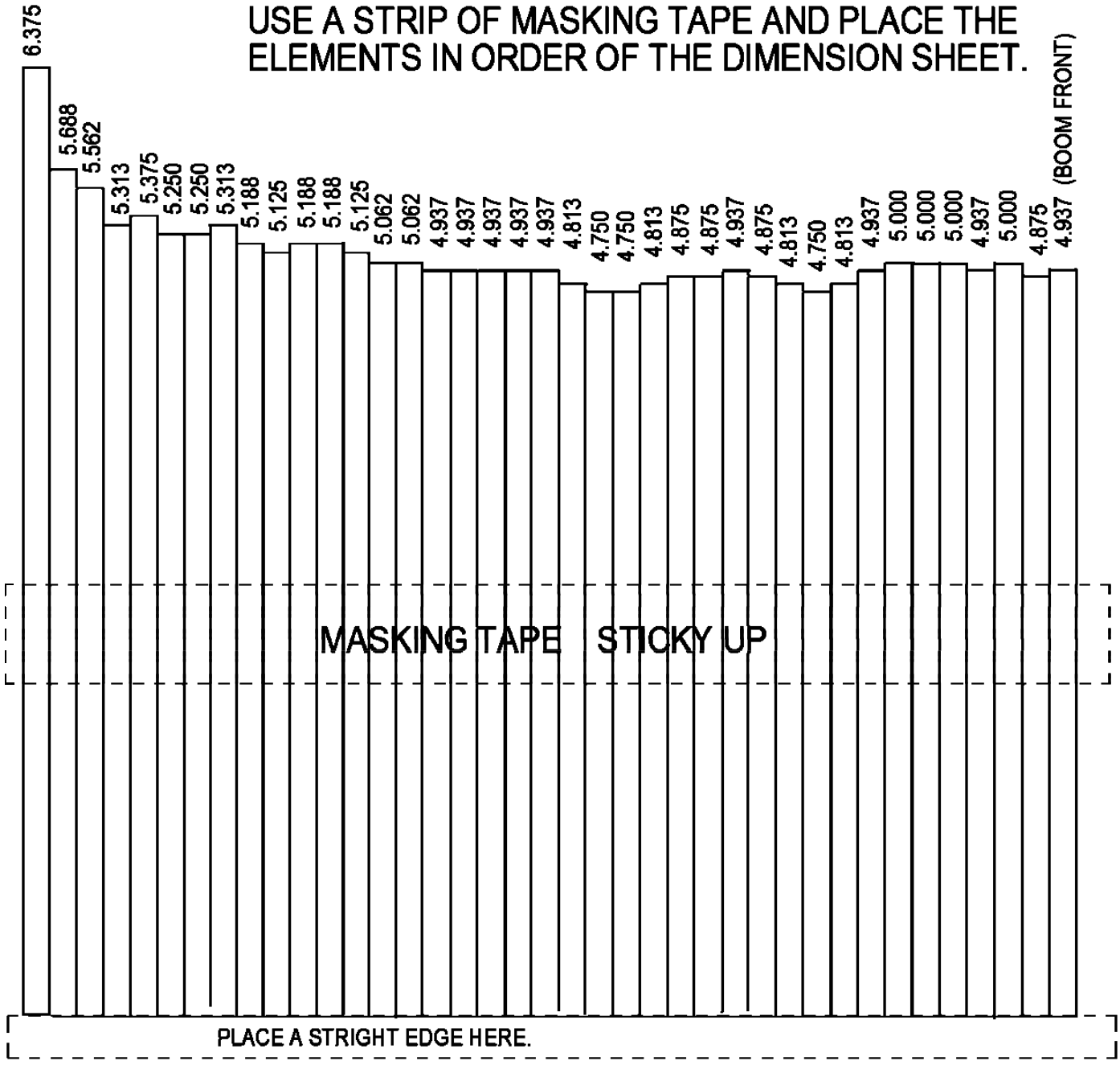
902-14WLC DIMENSION SHEET



902-14WLC ELEMENT LAYOUT

USE A STRIP OF MASKING TAPE AND PLACE THE ELEMENTS IN ORDER OF THE DIMENSION SHEET.



DECIMAL TO FRACTION CONVERSION
.062 = 1/16
.125 = 1/8
.188 = 3/16
.250 = 1/4
.313 = 5/16
.375 = 3/8
.437 = 7/16
.500 = 1/2
.562 = 9/16
.625 = 5/8
.688 = 11/16
.750 = 3/4
.813 = 13/16
.875 = 7/8
.937 = 15/16

WHEN COMPLETE START AT THE FRONT (OF THE BOOM 4.937 ELE. AND, ONE BY ONE INSERT THE ELEMENTS INTO THE BOOM AS DESCRIBED IN THE MANUAL.

902-14WLC PARTS & HARDWARE

DESCRIPTION	QTY
BOOM SECTION, 1 X .058 X 60” STR	1
BOOM SECTION, 1 X .058 X 57” STR	1
BOOM SECTION, 1-1/4 X .058 X 60" SBE	1
BOOM SECTION, 3/4 X .049 X 17" STR	1
ELEMENTS, 3/16 ROD x Dimension Sheet	39
DRIVEN ELEMENT ASSEMBLY, (917ISP DE ASSY)	1
BOOM-TO-MAST "L" PLATE	1
U-BOLT AND CRADLE, 2"	2
U-BOLT AND CRADLE, 1-1/2”	2
ASSEMBLY MANUAL	1

IN HARDWARE BAG:

BUTTON INSULATORS	80
SHAFT RETAINER, SS	80
NUT, 5/16-18 SS	8
LOCKWASHER, 5/16 SS	8
SCREW, 8-32 X 1-3/4 SS	2
SCREW, 8-32 X 1-1/2 SS	4
SCREW, 8-32 X 1-1/4 SS	2
LOCKNUT, 8-32 SS	8
SCREW, 8-32 X 1-1/4" SS	1
CABLE TIE, NYLON	4
PUSH TUBE, 3/8 X 3”	1

MANUFACTURED IN THE U.S.A. BY:

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