DIRECTIVE SYSTEMS

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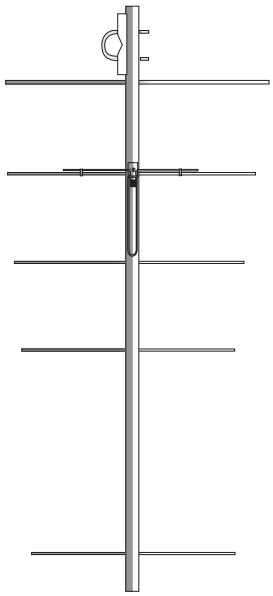
DPM144-5LVA

5 ELEMENT 144-148 MHz YAGI

ELECTRICAL SPECIFICATIONS

Frequency range: MHz	144-148
Gain: dBd	9.0
Impedance: Ohms	50
Connector type	Type N (F) UG-58/U
Front -to- back ratio: dB	20
SWR: Typical at resonance	≅ 1.2:1
Beamwidth: -3 dB degrees	
E- Plane	52
-10 dB	89.6
H- Plane	65
Sidelobe level: decibels	
E- Plane	-17
H- Plane	-16
Power rating, Continuous: Watts	1500
Stacking Distance: in. (m)	
E- Plane	72" (1.829)
H- Plane	66" (1.676)



Designed for tower leg mounting in large fixed vertical stacked arrays. They are ideal for contesting, but may also be used for other applications. A 2" u-bolt mount is available as an option. Please specify when ordering.

MECHANICAL SPECIFICATIONS

Boom length: in. (m.)	72 (1.829)
Turning radius: in.. (m.)	68 (1.727)
Weight Assembled: Lbs (kg.)	2.8 (1.27)
Max mast size: In. (cm.)	1.5 (3.81)
Wind surface area: Ft (m.)	0.5 (.046)
Wind Survival: Mph (km/hr)	100 (160)

PARTS LIST

Boom	
1 1/4" OD x 0.058 x 36" rear boom w. coax/ balun assy. attached	1
1 1/8" OD x 0.058 x 40" front boom	1
Element bundle	
5 elements w. 2 T-match rods	1
Boom to Mast Bracket	1
HARDWARE BAG #1	
8-32 x 1 3/4" machine screw	1
8-32 s.s. hex nut	1
#8 split s.s.lock washer	1

BAG # 1 (CONTINUED)	
Brass T match bars	2
U- bolt, s.s. 1/4-20 x 1 1/2"	2
U-bolt, s.s. 1/4-20 x 1 3/8"	2
Nut, hex, s.s. 1/4-20	4
Lock washer, split, s.s. 1/4"	4
Nut, hex s.s. 5/16-18	4
Lock washer, split, s.s. 5/16"	2
Insulators, element, Delrin®	10
Keepers, s.s. 3/16"	12
Element assembly tool	1
Assembly instructions	1

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Antenna components should be removed from the shipping carton, and the individual parts should be compared with the parts list on page one of this instruction sheet.

The boom consists of two aluminum tubing sections, 36 & 40" long. The rear boom section already has the balun & driven element connector attached and is the 1 1/4" diameter tube. Assemble the two boom pieces and fasten with the 8-32 x 1 3/4" machine screw and hardware supplied.

The element bundle contains all of the elements needed for assembly. Take time to inventory each one and check off each dimension with Table 1. Some elements vary by one or two millimeters, so extreme care in measuring is required here. Arrange elements in order of descending size and mark each element with a scribe, or sharp tool to properly locate the first keeper position. The scribe dimensions are listed in Table 1 as the " Keeper half length". The keepers are the stainless steel fasteners that slide over the 3/16" dia. Aluminum elements. Note that the reflector element is the longest followed by the brass driven element, and then director #1. Director #3 is the shortest element. Once you have marked each element, and using the hollow assembly tool, push the keeper onto the element until it meets the scribed line. Be careful as the keeper cannot reverse direction if you overshoot the line. You must push the keeper all the way to the end and start over. A good trick is to install the element in a bench vise with the scribed line flush with the edge of the vise jaws. Push the keeper until it is against the edge of the jaws. This way, it is impossible to overshoot the scribed line. Be aware that the keepers are designed to go a certain way. See the figure 6 for proper orientation prior to attaching the keepers. Now attach one keeper to every element as advised in Table 1, and shown below.

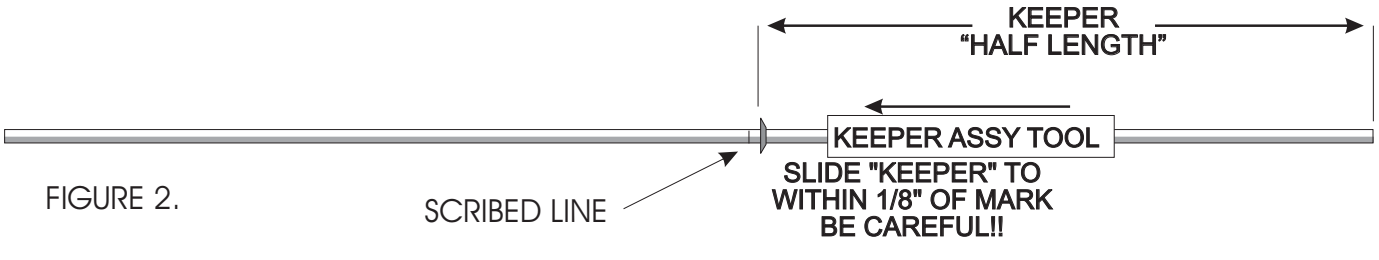


FIGURE 2.

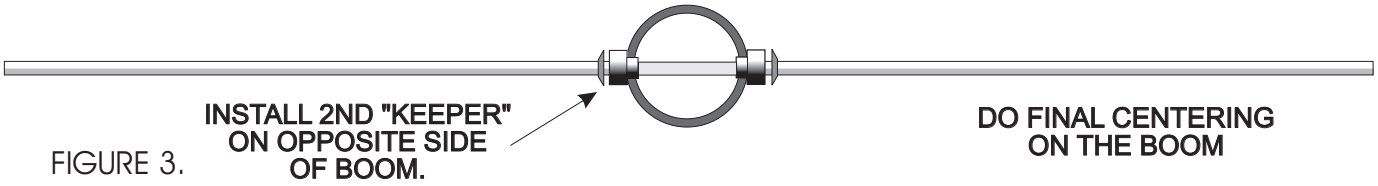


FIGURE 3.

You are now ready to install the elements onto the boom. Start at the rear of the antenna, (the fatter end, with the connector assembly attached) Install a pair of black Delrin insulators in the large 5/16" hole on each side of the boom . They may fit tightly and may have to be tapped into position with a small hammer. Now slide the correct element through the two insulators. Press a second keeper onto the opposite end of the element from the first keeper and push until the element is snugly captured on the insulators. Check that the element is centered on the boom. Equal lengths should extend on either side of the boom. Proceed with each succeeding element until all 5 elements are attached to the boom as shown above. Note that the driven element is brass rod, but is installed as the other elements.

The driven element T-Match assembly is constructed as shown in Figures 4 & 5.

Locate the two 1/8" brass rod T- match pieces. Both are flattened on one end. Locate also the brass T-Match bars, and position them on the brass driven element as shown in figure 4.

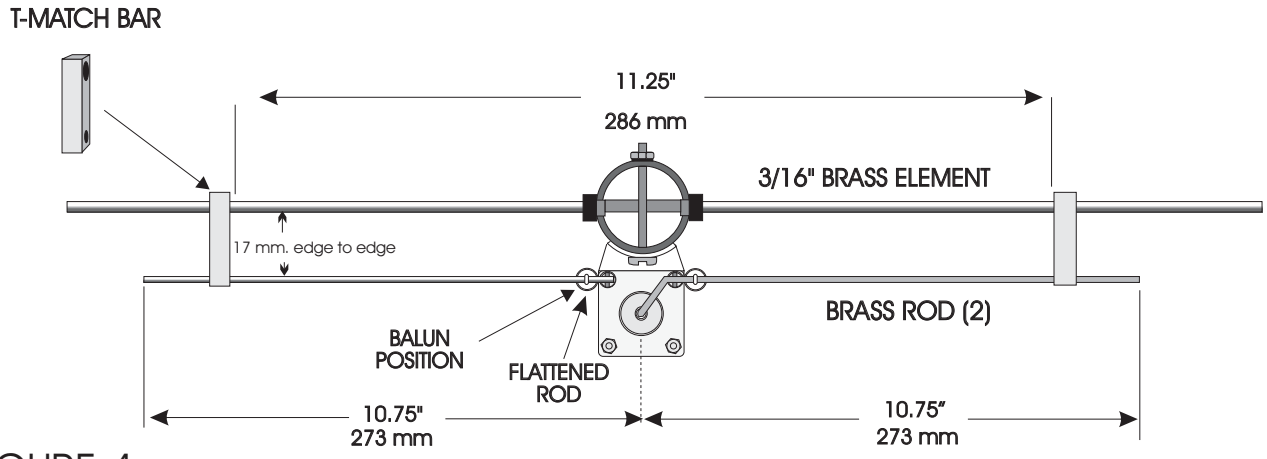
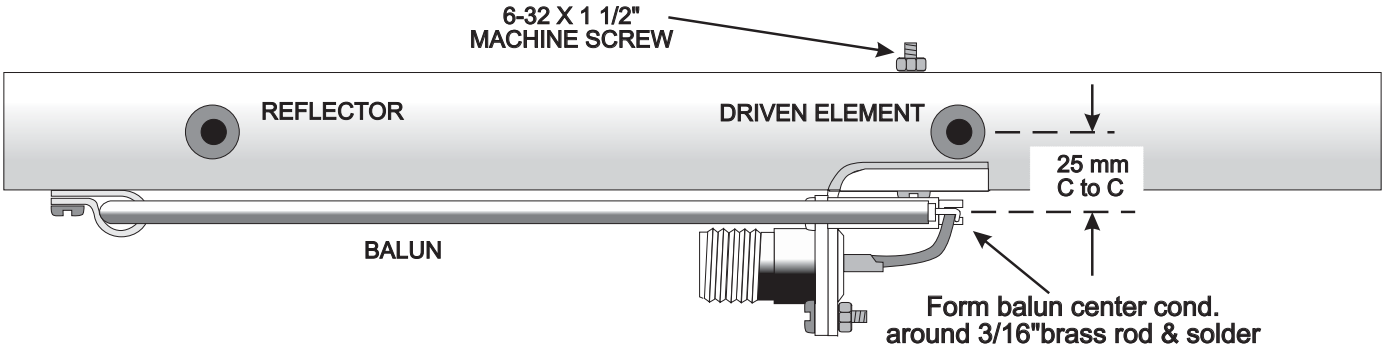


FIGURE 4.

Slide the flattened ends of each T-match rod through the shorting bar and then between the fingers of each blue standoff insulator. Note that one insulator already has a short copper wire attached to the N connector solder cup, while the other insulator is empty. At this point, wrapping the balun center conductor wires around the T-match rods, (See Figure 5) will help hold everything in place. Do not apply much force to the blue standoffs. They are easily broken if you are heavy handed!

I**f you are installing multiple antennas, please be sure that you build each antenna with the same T match rod orientation. In the above drawing, the center pin goes to the right hand side of the antenna as viewed from the back of the connector. Make sure both antennas do the same! Proper phase relationship is very important here!** Align the T match bars parallel with the edge of the connector bracket, and adjust their position as shown in Figure 4 and 5. You can slide the bars carefully into position. Be careful and do not apply excessive force to the blue standoff insulators. You may have to bend the connector bracket slightly to achieve the listed dimensions.

After straightening and aligning everything, you may solder the T-match rods to the standoff insulators, and the wires to the T-match rods.and solder them both. Once the T-match bars and brass rods are set, you can solder the T Match bars as well. This will complete the assembly of your DPM144-5LVA. The construction employed in this antenna will provide many years of consistent performance with no degradation of performance due to corrosion and weathering.



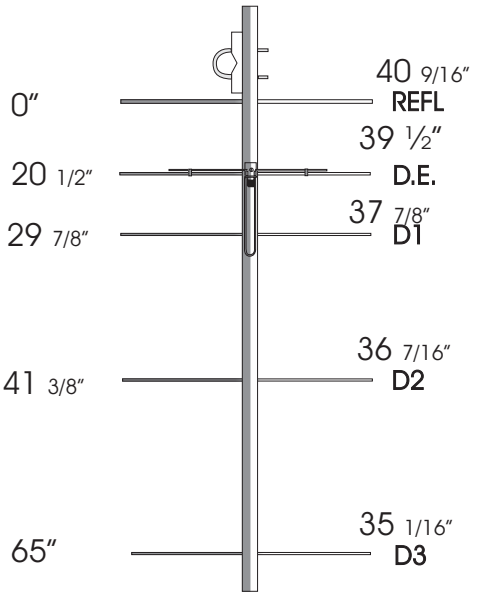
DRIVEN ELEMENT SIDE VIEW

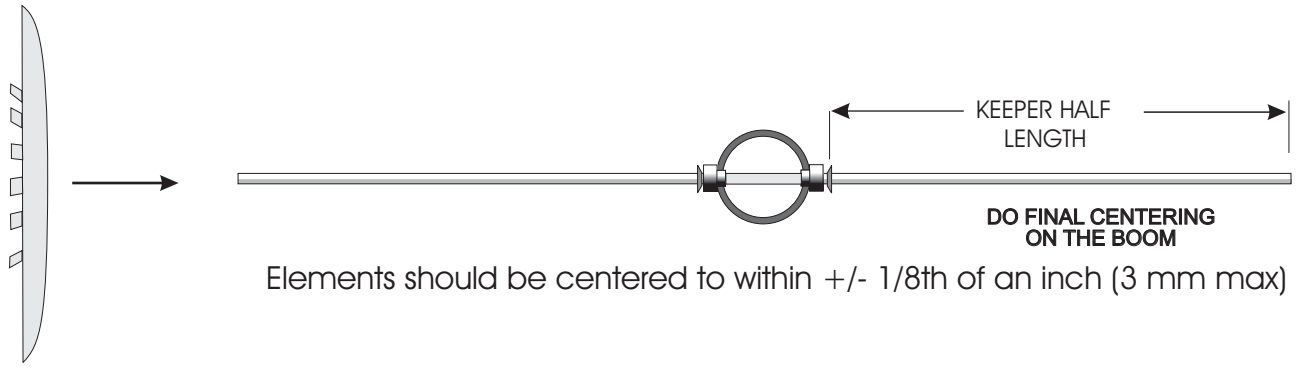
FIGURE 5.

You are now ready to install your antenna. Install the 3 x 5" aluminum extruded plate using the small 1 3/8" u-bolts to attach the boom to the 3 x 5" plate. The larger 1 1/2" u-bolts will clamp the mast plate to your support mast. Note that the antenna may be installed either horizontally or vertically polarized. Once you have the u-bolts installed and the antenna mounted on your support mast and tightened, you can route your feedline along the mast and over to the driven element and connector. Dress the coax against the antenna boom and tighten the connector. Seal the connector body with several layers of good grade vinyl tape. Then apply a layer of butyl rubber antenna sealer or RTV over the tape. This will provide a good vapor barrier and ensure years of trouble free performance. It is alo a good idea to spray the driven element and connector assembly with a clear spray such as Rustoleum Clearseal or Krylon clear spray. This will enhance the vapor barrier and prevent oxidation of the brass components.

TABLE 1

ELEMENT DESCRIPTION	EL LENGTH In.	mm.	KEEPER ½ LENGTH In.	mm
REFLECTOR	40 9/16	1030	19.516	495.7
DRIVEN ELEMENT	39 ½	1003	18.985	482.2
DIRECTOR #1	37 7/8	962	18.173	461.5
DIRECTOR #2	36 7/16	925.5	17.454	443.3
DIRECTOR #3	35 1/16	890.6	16.766	425.9





Elements should be centered to within +/- 1/8th of an inch (3 mm max)

FIGURE 6.
KEEPER DETAIL Note direction of travel!