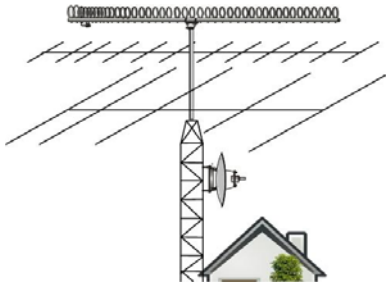

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3-ELEMENT 50-MHZ YAGI, DSE3-50

INTRODUCTION

The Directive Systems **DSE3-50** is a 3 element Yagi-Uda antenna that provides optimum performance for a 6-foot boom-length antenna, while addressing construction details of importance to the first-time, as well as the experienced, builder. Design issues such as selecting the grade of aluminum used for boom and element material to assure harsh-environment survivability, use of stainless-steel boom hardware and element-assembly hardware, and use of commonly available hand tools to aid in ease of construction, have been considered in producing an antenna kit which is complete, satisfying to build, and gives the builder one of the finest 6-meter antennas available.

ELECTRICAL SPECIFICATIONS

Calculated gain:	8 dBi
SWR 1.5:1 Bandwidth:	2 MHz
SWR 50.1 MHz	Less than1.3:1 typical
F/B ratio:	>20 dB
Impedance:	50 ohms nominal
Maximum Power:	1000 Watts

MECHANICAL SPECIFICATIONS

Length:	6 feet
Turning radius:	~96 inches
Boom-sections/elements	6063-T832 aluminum 1.375" x .058" wall
Element sections:	5/8" & ½" x .058" wall
T-match arms:	3/8" x .058" wall
All stainless steel hardware.	
Surface area:	~1.5 square feet
Wind survival:	90+ mph
Maximum mast size:	2.0" OD – larger on Special orders
Coax connector:	Weatherproof N–type
Assembled weight:	7.5 lbs

BEFORE INSTALLING YOUR NEW ANTENNA, PLEASE BE SURE TO READ THE ENCLOSED WARNING PAMPHLET.

CAUTION: ***While we strive to remove all burrs from all machined parts, there is always the possibility of sharp edges. We strongly suggest checking the edges and use a fine file, or 400 grit sandpaper, to remove any burrs that may have been left.***

ASSEMBLY TIPS AND NOTES

TOOLS

Assembly of your antenna kit requires the following tools.

12' or greater tape measure
#2 Phillips screwdrivers
7/16" wrench or rachet and socket
Permanent marker (Sharpie)
Pliers

ASSEMBLY TIPS

1. Read an entire section before performing each assembly operation.

2. This Manual contains assembly drawings and other assembly-related information such as element lengths. Drawings are referred to by **Figure** number; charts and lists are referred to by **Table** number. Continue using the same Table or Figure number until told to use a different one.

3. All of the information needed to successfully complete the construction of an antenna kit is contained in this Manual. Keep this Manual in a safe place so that it will be available should you require it for future reference.

4. When tightening hardware **FOLLOW INSTRUCTIONS – DO NOT OVER TIGHTEN!** Deformation of the boom may occur, causing misalignment of elements.

5. Orient all hardware as instructed in each assembly step and as may be shown in an associated figure.

Elements will be called out by their position on the boom, R = reflector, DE = driven element and D-element number = director. The director's number is relative to the DE element with D-1 nearest the DE. The elements are marked R, DE and D.

PARTS LIST

Note: All hardware is Stainless Steel unless otherwise noted.

Unpack the antenna kit and check each part against the following list. Do not throw any packing material away until the antenna is completely assembled and ready for final installation. Some parts may be packed inside boom sections.

The box in which the antenna was shipped contains the following items:

1	6’ boom section
1	Boom to mast plate
6	Element halves (R, DE, D)
3	Element couplers
2	48” T-arms
1	Connector bracket assembly
1	Balun
1	Anti Seize Compound

Hardware Bag

2	T-arm shorting bars
4	8-32 x 1¼” Machine screws
5	#8 Nuts
4	#8 Split lock washers
2	#8 Internal tooth lock washers
2	6-32 x ½” Machine screws
5	#6 Internal tooth lock washers
3	1 ½” U-bolts
6	¼” Locknuts
3	Element saddles
6	½” Element End caps
2	3/8” T-arm End caps
2	1 3/8” End caps
3	Cable ties

Boom-to-Mast Hardware

2	¼” x 1 ¾” U-bolts
4	¼” Nuts
4	¼” Lock washers
4	¼” Flat washers
2	5/16” U-bolts
4	5/16” Nuts
4	5/16” Lock washers
4	5/16” Flat washers

Anti-Seize Compound - Apply a small amount to the aluminum joints to prevent the aluminum from oxidizing and to the threads of the U-Bolts to prevent galling.

ANTENNA ASSEMBLY

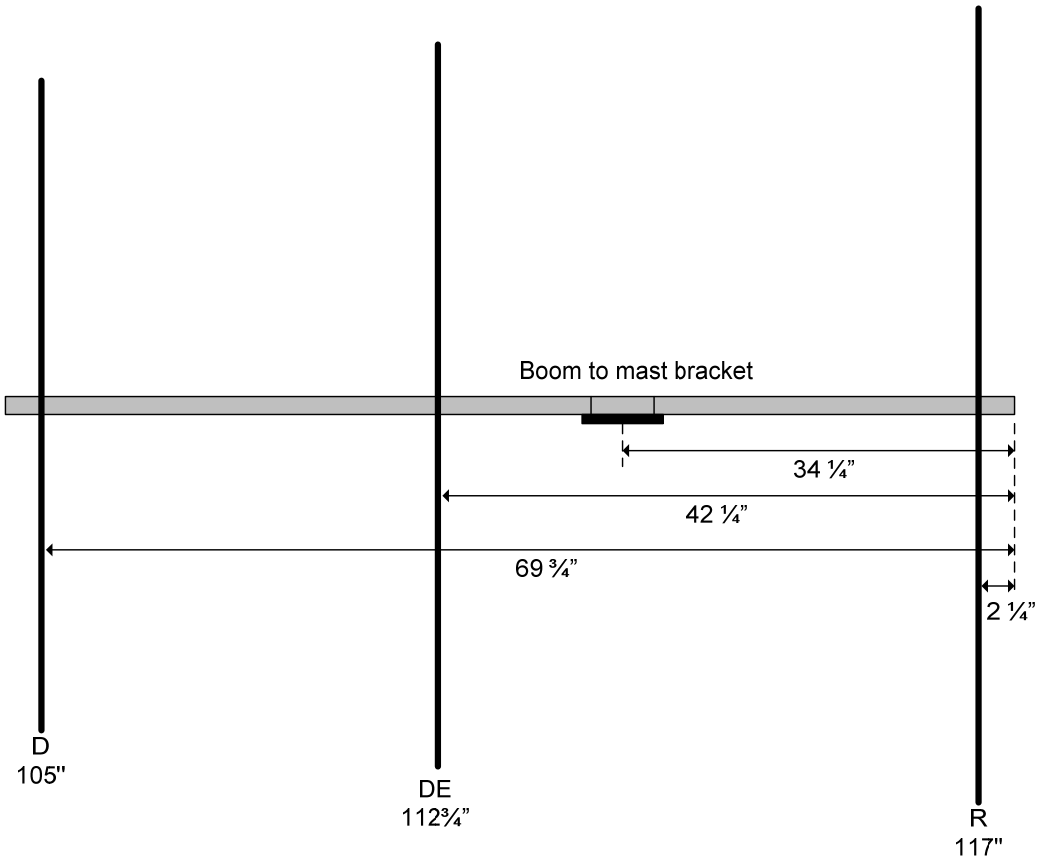
1. Locate the 6’ boom section and, using a permanent marker (refer to Figure 1), place a mark 2 ¼” from one end of the boom – this is the Reflector point. All further measurements are made from this end of the boom. Next, place a mark at 42 ¼” – this is the Driven Element point. Next, place a mark at 34 ¼” – this is the center line of the boom-to-mast plate. Last, place a mark at 69 ¾” – this is the Director.

   If this DSE3-50 has the rear mount option, place a mark 3 7/8” from the end of the main boom. Slide the 12” piece of 1 ½” tubing to this line, with the slits over the boom.

Mount the reflector 11 ½” from the rear of the boom extension. Tighten this U-bolt securely as this connection keeps the antenna horizontal. If your location is subject to icing, we recommend installing a sheet metal screw to lock these two boom sections together.

2. Starting with the Reflector elements (R), slide the two halves into the element coupler until you see the holes in the elements line up with the holes in the element coupler. Pass a U-bolt from the hardware bag over the boom, through an element saddle and then through the holes in the element. Align this assembly on the rear of the boom so that the U-bolt covers the mark you made in step #1. Install two ¼” locknuts and tighten.

DSE3-50 Dimensions



Drawing not to scale – all dimensions +/- ¼”

All distances measured from rear of boom

Figure 1

3. Similarly, assemble the Director (D) and attach it at the appropriate mark on the boom, making sure the element is perpendicular to the Reflector.

4. The Driven Element (DE) mounts the same way; however, the connector bracket sits between the element and the element to boom saddle (see Figure 2).

5. Locate the two 48” x 3/8” T-arms and the balun, and from bag #3 locate the T-arm shorting bars, the #8 hardware and the #6 hardware. The connector bracket came with the Delrin standoffs already installed. Using a 6-32 X ½” screw, place an internal tooth lock washer on the screw and

put the screw through one of the balun lugs connected to the center conductor. Next, place a second internal tooth lock washer on the screw, then insert the screw through the lug from the coax connector. Last, place a third internal tooth lock washer on the screw, then insert through one of the tee arms and screw it in to the Delrin standoff insulator. Do not over tighten the screw as you can strip the threads in the standoff insulator.

6. Slide the T-arm shorting bar over the end of the driven element and the T-arm. The shorting bar should be about 13” from the outer end of the driven element. Install 8-32 X 1 1/4” screws through the two holes in the shorting bars and install a lock washer and nut. Tighten both the shorting bar screws. Attach the other T-arm in a similar fashion, but without the wire coming from the connector and locate the shorting bar about 13” from the end of the other driven element half.

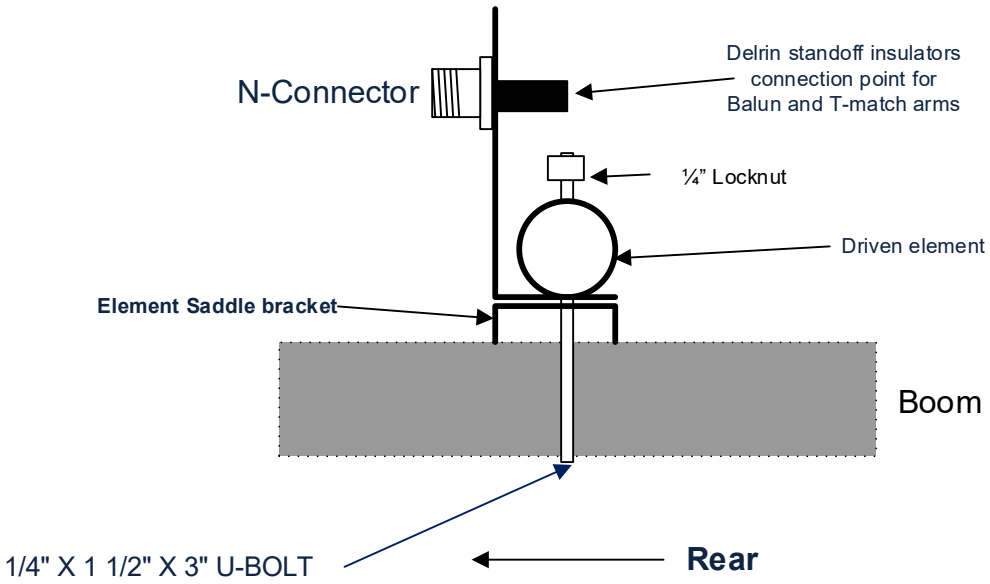


Figure 2

7. Connect both ground wires from both ends of the balun to the grounding screw just below the connector. Place a lock washer on the stud first, then both lugs, another lock washer and then the nut and tighten. Refer to Figure 3 for details.

8. Dress the balun along the boom or coil it as pictured. Securely tape the balun to the boom or use cable ties as pictured.

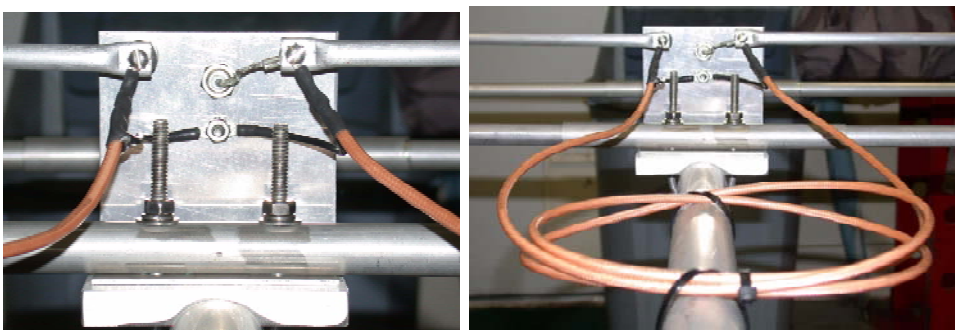


Figure 3

9. Install supplied plastic caps on ends of tubing.

10. Place the boom-to-mast plate against the boom at the marked center line (Step 1) and from the Boom-to-Mast hardware bag, use two ¼" U-bolts, ¼" flat washers, lock washers and nuts. Tighten the four ¼" nuts, making sure the boom-to-mast plate is perpendicular to the elements.

11. This completes the antenna assembly. Using the dimensions shown, the SWR below 50.4 MHz will be 1.3:1 or less. If you wish to improve the match, support the antenna at least one wavelength above the ground (about 20 feet). Check the match using a directional wattmeter or antenna analyzer. You can move the shorting bars in or out to change the match on the antenna. Always use coax in multiples of one half wavelength when testing to ensure you are seeing the real match of the antenna. After completing your match adjustment, or if you don't want to adjust, tighten the four nuts on the shorting bars.

DO NOT, UNDER ANY CIRCUMSTANCES, APPLY ANY TYPE OF SEALANT OR COATING TO THE DRIVEN ELEMENT, T-ARMS OR CONNECTOR ASSEMBLY, OTHER THAN KRYLON®
CLEAR COAT. ANY OTHER COATING WILL ADVERSELY AFFECT THE SWR AND VOID YOUR WARRANTY.

Directive Systems Warranty Policy

All Directive Systems antennas are built with the finest materials available. We take great pride in building a quality product that will give years of good service and performance. If there is a defect in materials or workmanship within 90 days of purchase, Directive Systems will repair or replace the defective part, free of charge, to the original purchaser. **DO NOT RETURN ANYTHING WITHOUT PRIOR AUTHORIZATION FROM DIRECTIVE SYSTEMS.** Please contact us either by phone or email describing the problem and we will resolve your problem.

If, after examining a new antenna you received, you are not satisfied, contact us immediately for return authorization and refund. **ANY ANTENNA THAT HAS BEEN MODIFIED WILL BE SUBJECT TO A RESTOCKING CHARGE. IF AN ANTENNA IS SO MODIFIED AS TO MAKE IT UNUSABLE, DIRECTIVE SYSTEMS RESERVES THE RIGHT TO REFUSE TO ACCEPT THE ANTENNA FOR RETURN.**