

Directive Systems & Engineering

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24cm Loop Yagi Kit, Model DSE2455LYK (w/sub-boom)

SPECIFICATIONS

Frequency range:	1.24 to 1.27 GHz	Gain:	≅21 dBi
Number of elements:	55	3 dB Beamwidth	
Boom length:	180 inches	(E plane):	≅14°
Boom diameter:	1 inch	F/B ratio:	≥20 dB
Mast diameter:	2 inch max	Maximum Power:	550 W average
Weight: (assembled)	7 pounds	Stacking distance:	26 inches' vertical
Connector:	Type-N female		29 inches' horizontal

PARTS LIST

Note: All hardware is Stainless Steel unless otherwise noted.

Quantity	Description	Quantity	Description
3	.058" x 1" drilled boom	55	4-40 x 1 1/4" screw
1	74 1/4" x 3/4" square sub-boom	56	4-40 lock nut
2	sub-boom brackets	4	8-32 x 1/2" screw
2	sub-boom plates	8	8-32 x 1 1/4" screw
1	reflector 1 (1/4")	4	8-32 x 1 3/8" screw
1	reflector 2 (3/8")	2	8-32 x 2" screw
1	driven element	18	#8 hex nut
4	directors 1-4 (1/4" wide)	18	#8 Split Lock Washer
7	directors 5-11	1	boom to Mast Bracket
6	directors 12-17	1	boom to Mast Plate
6	directors 18-23	2	2" U-bolt with nuts & lock washers
12	directors 24-35	2	saddles
7	directors 36-42	1	cable assy w/connector
10	directors 43-52	1	Anti-Seize Compound
		2	1" Black End Cap
		1	Assembly Manual

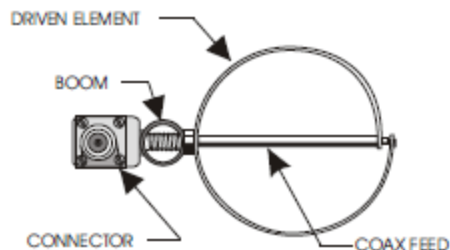
Anti-Seize Compound - Apply a small amount of the supplied Anti-Seize Compound to the aluminum joints and to the threads of the U-Bolts to prevent galling.

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.*

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



**HORIZONTAL
POLARIZATION**
(Can be up or down)



**VERTICAL
POLARIZATION**
(Can be left or right)

ASSEMBLY INSTRUCTIONS

1) Slide the three boom sections together, matching the colors at each splice connection. Temporarily secure the booms with a 4-40 x 1 ¼" screw and lock nut at each boom splice.

2) Attach loops to the boom with 4-40 screws and lock nuts in proper sequence. Loops go on the side of the boom marked with an "X". Attach the contents of each bag of elements before opening the next bag. This will prevent any mix-up of elements on the boom. R2 (Reflector 2 -3/8" wide) is always the first element to be installed with R1 (Reflector 1 -1/4" wide) always next to the driven element. When tightening the nuts on the parasitic directors, be careful not to torque them too tightly. Snug down the nuts, align the elements and use a screwdriver for final tightening. A 1/4" nut driver is almost mandatory for this job! Attach the brass driven element with the 5/16" nut provided. If only a single antenna is being built, it does not matter which way the loop is oriented. If antennas are to be stacked, see "Instructions for Stacking Loop Yagis".

Refer to photos on the next few steps for clarification.

3) Mount the boom to mast bracket (square tubing piece) to the center boom section, using 8-32 X 2" screws, lock washers and nuts. Mount the boom to mast plate to this bracket using 8-32 x 1 ¼" screws, lock washers and nuts. Note: There may be extra holes in the plate that may be used for different applications.

4) There are two sub-boom brackets consisting of ½" aluminum angle and sub-boom plates. Mount the angle brackets on the front and rear boom sections using 8-32 x 1 3/8" screws, lock washers and nuts. Mount the sub-boom plates to these brackets using 8-32 x ½" screws, lock washers and nuts.

5) Mount the sub-boom (¾" thick wall aluminum square tubing) to the sub-boom brackets and boom to mast plate using 8-32 x 1 ¼" screws, lock washers and nuts. NOTE: Do not tighten any of this hardware until sub-boom assembly is complete (see photos at end of manual).

6) Install the cable assembly through the hole in the driven element mounting bolt. Make sure the connector bracket is correctly oriented, the bend should be forward for center mount antennas and rear facing for rear mount antennas. Solder the outer shield to the driven loop first making sure there is no shield sticking above the large hole in the driven loop. After the shield is soldered, pass the center conductor through the small hole in the driven loop and bend the center conductor over and solder (See Assembly Tips below).

We have created a You Tube video, the link of which can be found on our website, documenting the following steps:

<https://youtu.be/ojXbsDv5cvU>

At this point the connector assembly is facing down, connect a piece of coax and your SWR bridge or VNA. Pull down on the connector (which will flatten the loop) until you reach the lowest SWR. If it's less than 1.5:1 you can stop and make sure the loop doesn't try to pop back up, sometimes you have to squeeze the loop with your fingers to make sure it stays in the shape that gave the best SWR. If you want to further lower the SWR, from the rear of the antenna, place both your thumbs on the driven loop on either side and gently push it forward towards D1, you only need to tilt it maybe 3/16" to 1/4" and that should drop the SWR to 1.1:1 or less.

Now, GENTLY bend the UT-141 coax after it exits the boom towards the front or rear, depending on the mounting. You do not want to bend it so tightly that it crushes where it extends through the bolt. The connector bracket should line up with either D1 or D2 (or the hole with the circle around it on rear mount antennas), remove that nut and place the connector bracket on the screw and re-attach the nut. If the bracket doesn't line up, sometimes you have to flip the bracket. Loosen the 3/4" nut by holding the connector body with a 9/16" open end wrench. Remove the connector bracket and flip it.



Connector doesn't fit



Front Mount Connector



Rear Mount Connector

7) Attach the feedline and tape it to the mast. Seal all connections with silicone RTV or equivalent.

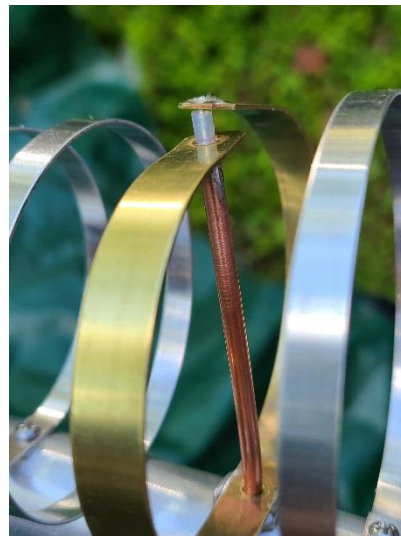
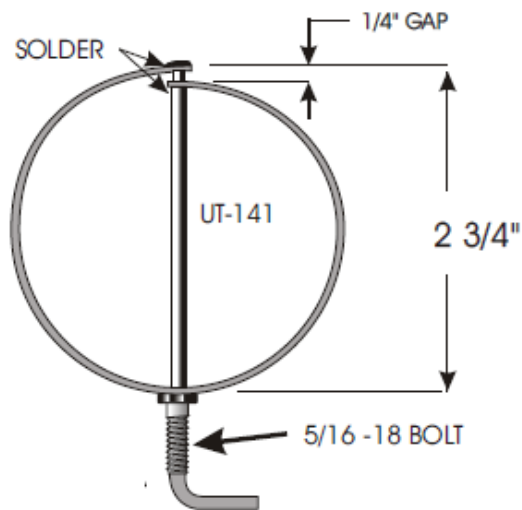
8) Attach the two black end caps, and this will complete the assembly of your DSE2455LYK.

9) The SWR should be 1.5:1 or better. Additional tweaking can be accomplished by adjusting the distance between the driven element and R1 or by adjusting the shape of the driven element.

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.

ASSEMBLY TIPS:

The boom diameter is 1 inch, and it is drilled for 4-40 hardware (no. 33 drill bit). The driven element hole is 5/16-inch dia. All elements are 0.032-inch-thick and 0.375 inch wide except R1 & D1 thru 4 which are 0.250" wide. Note that the element spacing from D7 on is 3.560 inches. The driven element is installed in the 5/16" hole in the boom. The feed coaxial cable (0.141-inch semi rigid) goes through the mounting bolt and is formed in a 90-degree bend so that the connector bracket can be bolted to the boom at Director #1 using the D1 hardware. The connector end is soldered to the open ends of the brass element. Allow a 1/4" gap at the feed point. For best match, the driven element should be approximately 2.75 inches high; this makes it wider than it is tall. This shape can be adjusted for best match. This antenna is based on work done by G3JVL.



Soldered Driven Element





ELEMENT TABLE

Element	Spacing from end of boom	Circumference	Element	Spacing from end of boom	Circumference	Element	D52 Spacing from end of boom	176.880 Circumference
R2			D16	48.720	8.274	D34	112.800	7.905
R1	0.000	10.000	D17	52.280	8.274	D35	116.360	7.905
DE	3.100	10.060	D18	55.840	8.008	D36	119.920	7.805
D1	4.050	9.586	D19	59.400	8.008	D37	123.480	7.805
D2	5.170	8.584	D20	62.960	8.008	D38	127.040	7.805
D3	6.000	8.584	D21	66.520	8.008	D39	130.600	7.805
D4	7.780	8.584	D22	70.080	8.008	D40	134.160	7.805
D5	9.560	8.584	D23	73.640	8.008	D41	137.720	7.805
D6	10.810	8.534	D24	77.200	7.905	D42	141.280	7.805
D7	13.120	8.534	D25	80.760	7.905	D43	144.840	7.705
D8	16.680	8.534	D26	84.320	7.905	D44	148.400	7.705
D9	20.240	8.534	D27	87.880	7.905	D45	151.960	7.705
D10	23.800	8.534	D28	91.440	7.905	D46	155.520	7.705
D11	27.360	8.534	D29	95.000	7.905	D47	159.080	7.705
D12	30.920	8.534	D30	98.560	7.905	D48	162.640	7.705
D13	34.480	8.274	D31	102.120	7.905	D49	166.200	7.705
D14	38.040	8.274	D32	105.680	7.905	D50	169.760	7.705
D15	41.600	8.274	D33	109.240	7.905	D51	173.320	7.705
	45.160	8.274						

Note: All dimensions are in inches

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 work to resolve it.

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.**