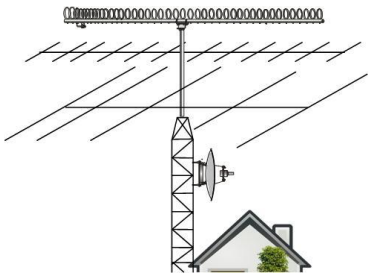

Directive Systems & Engineering

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9cm Loop Yagi, Model DSE9112LYK (w/sub-boom)

SPECIFICATIONS

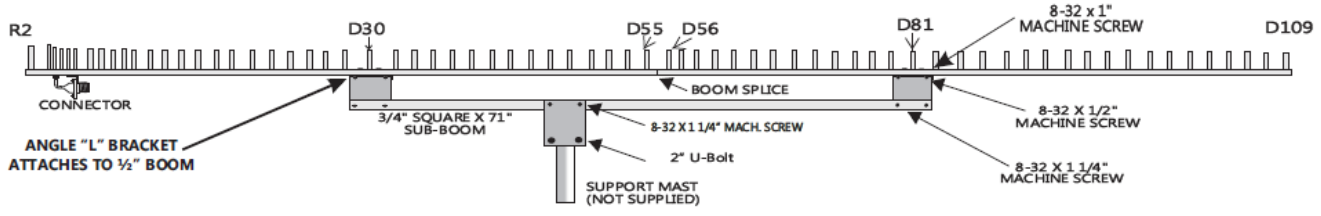
Frequency range:	3.40 to 3.50 GHz	Gain:	≅25.2 dBi
Number of elements:	112	3 dB Beamwidth	
Boom length:	144 inches	(E plane):	≅8.7º
Boom diameter:	0.5 inch	(H plane):	≅9.0º
Mast diameter:	2 inches max	F/B ratio:	≥25 dB
Weight: (assembled)	4.62 pounds	Maximum Power:	300 W average
Connector:	Type-N female	Stacking distance:	21 inches' vertical
Wind area:	1.0 sq. ft.		22 inches' horizontal

PARTS LIST

Note: All hardware is Stainless Steel unless otherwise noted.

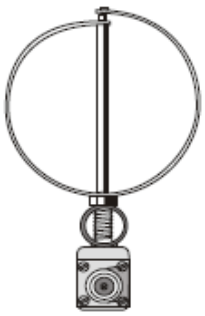
Quantity	Description	Quantity	Description
2	0.5" x 48" drilled boom	18	directors 92-109
1	.75" x 71" square sub-boom	112	3-48 x 3/4" machine screw
2	3 x 4" sub boom plate	112	#3 split lock washer
2	Small sub boom bracket	112	#3 hex nut
2	reflectors 1&2	4	8-32 x 1/2" machine screw
1	driven element	4	8-32 x 1" machine screw
11	directors 1-11	6	8-32 x 1 1/4" machine screw
7	directors 12-18	14	#8 split lock washer
6	directors 19-24	14	#8 hex nut
12	directors 25-36	1	3 1/2 x 4" boom to mast plate
6	directors 37-42	1	U-bolt with nuts & saddle
7	directors 43-49	1	Cable assembly w/connector
12	directors 50-61	2	1/2" black end caps
12	directors 62-73	1	Anti-Seize Compound
18	directors 74-91	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.



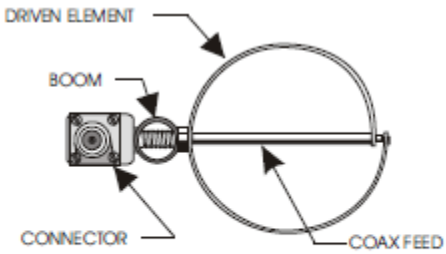
BEFORE INSTALLING YOUR NEW ANTENNA, PLEASE BE SURE TO READ TH ENCLOSED WARNING PAMPHLET.

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.***



HORIZONTAL POLARIZATION

(Can be up or down)



VERTICAL POLARIZATION

(Can be left or right)

ASSEMBLY INSTRUCTIONS

1) Assemble the boom using the alignment marks. The splice is between elements D55 & D56 and is secured by the loop mounting screws of D56, 57 & 58. Attach loops to the boom with 3-48 x 3/4" screws, lock washers and nuts in proper sequence. Loops go on the side of the boom marked with an "X". When tightening the nuts on the parasitic elements, be careful not to torque them too tightly. Snug down the nuts, align the elements and use a screwdriver for the final tightening. A 3/16" nut driver is almost mandatory for this job! Attach the driven element with the 1/4-20 stainless steel nut. 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."

2) Attach the two small angle brackets to the 1/2” boom with 8-32 hardware near Directors 20 and 54. Use 1" screws to attach to the 1/2" boom and 1/2" screws for attaching the two 3” x 4” flat plates to the sub-boom. Attach the 3/4" square sub-boom to the two plates using 8-32 x 1 1/4" hardware. Align the center mounting holes on the sub boom toward the rear of the antenna so that the holes are at the antenna balance point. Install the remaining 3 1/2” x 4" bracket with U-bolt holes and U-bolt at the balance point of the antenna. Use 8-32 x 1 1/4" hardware to secure it to the sub boom.

3) 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 ¼" 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 ¾" 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

4) Attach the feedline and tape it to the sub-boom. You can route the coax along the sub boom. Seal all connections with silicone RTV or equivalent.

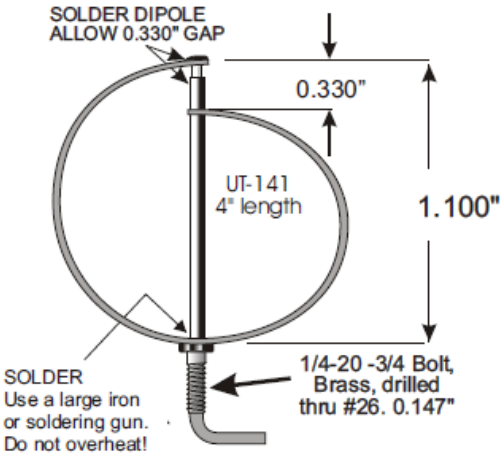
5) Attach the two black end caps and this will complete the assembly of your DSE9112LYK.

6) 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.

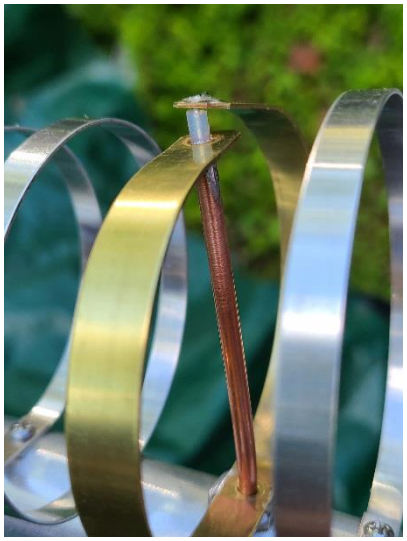
ASSEMBLY TIPS:

The 3456 MHz loop Yagi elements are quite small and require more care in assembly than their lower frequency relatives. If reasonable care is used, the results will be worth the extra effort. To assemble each individual loop, push the 3-48 machine screw just slightly through one end of the formed loop. While grasping the machine screw, move the other loop end hole and push it down onto the 3-48 machine screw. When both holes are aligned, push the screw through with your thumbnail. Be careful not to distort the loop. If you have problems, it is a good idea to grasp the screw body with a strong set of needle nosed pliers (they can fit inside the loop better than big fingers!) Guide the screw through both holes. Align the screw slots parallel with loop plane.

Install the individual sets of loops as a group and tighten as you go along. Check your work, and verify director numbers. It is easier to correct mistakes when they happen, rather than later when the antenna is completed! Tighten the nuts by hand, and then finish the job using a flat blade screw driver and a machine screwdriver with a 3/16" socket for the 3-48 nuts. Solder the driven element as shown at right, then, with a large iron apply solder to lock the .141" coax in the 1/4" brass bolt. This will stabilize the VSWR at this frequency.



ATTACH CONNECTOR ASSEMBLY
BRACKET TO D-3 MOUNTING SCREW.



Soldered 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.

LOOP & BOOM DIMENSIONS FOR 9112LY

Element	Spacing from end of boom	Circumference	Element	Spacing from end of boom	Circumference	Element	Spacing from end of boom	Circumference
R2	1.000	3.852	D35	44.635	2.864	D72	94.030	2.715
R1	2.050	3.852	D36	45.970	2.864	D73	95.365	2.715
DE	2.518	3.575	D37	47.305	2.821	D74	96.700	2.691
D1	2.938	3.086	D38	48.640	2.821	D75	98.035	2.691
D2	3.250	3.086	D39	49.975	2.821	D76	99.370	2.691
D3	3.917	3.086	D40	51.310	2.821	D77	100.705	2.691
D4	4.584	3.086	D41	52.645	2.821	D78	102.040	2.691
D5	5.053	3.086	D42	53.980	2.821	D79	103.375	2.691
D6	5.920	3.086	D43	55.315	2.781	D80	104.710	2.691
D7	7.255	3.086	D44	56.650	2.781	D81	106.045	2.691
D8	8.590	3.086	D45	57.985	2.781	D82	107.380	2.691
D9	9.925	3.086	D46	59.320	2.781	D83	108.715	2.691
D10	11.260	3.086	D47	60.655	2.781	D84	110.050	2.691
D11	12.595	3.086	D48	61.990	2.781	D85	111.385	2.691
D12	13.930	2.995	D49	63.325	2.781	D86	112.720	2.691
D13	15.265	2.995	D50	64.660	2.749	D87	114.055	2.691
D14	16.600	2.995	D51	65.995	2.749	D88	115.390	2.691
D15	17.935	2.995	D52	67.330	2.749	D89	116.725	2.691
D16	19.270	2.995	D53	68.665	2.749	D90	118.060	2.691
D17	20.605	2.995	D54	70.000	2.749	D91	119.395	2.691
D18	21.940	2.995	D55	71.335	2.749	D92	120.730	2.661
D19	23.275	2.900	D56	72.670	2.749	D93	122.065	2.661
D20	24.610	2.900	D57	74.005	2.749	D94	123.400	2.661
D21	25.945	2.900	D58	75.340	2.749	D95	124.725	2.661
D22	27.280	2.900	D59	76.675	2.749	D96	126.070	2.661
D23	28.615	2.900	D60	78.010	2.749	D97	127.405	2.661
D24	29.950	2.900	D61	79.345	2.749	D98	128.740	2.661
D25	31.285	2.864	D62	80.680	2.715	D99	130.075	2.661
D26	32.620	2.864	D63	82.015	2.715	D100	131.410	2.661
D27	33.955	2.864	D64	83.350	2.715	D101	132.745	2.661
D28	35.290	2.864	D65	84.685	2.715	D102	134.080	2.661
D29	36.625	2.864	D66	86.020	2.715	D103	135.415	2.661
D30	37.960	2.864	D67	87.355	2.715	D104	136.750	2.661
D31	39.295	2.864	D68	88.690	2.715	D105	138.085	2.661
D32	40.630	2.864	D69	90.025	2.715	D106	139.420	2.661
D33	41.965	2.864	D70	91.360	2.715	D107	140.755	2.661
D34	43.300	2.864	D71	92.695	2.715	D108	142.090	2.661
						D109	143.425	2.661

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.**