

## CONGRATULATIONS!

You are installing an effective and efficient Larsen® Kūlrod® Antenna, engineered and field tested to deliver top performance. Follow these simple installation instructions and find out why "You Can Hear the Difference" with Larsen Antennas. Low band, high band and quarter wave antennas all handle 200 watts of output power. Larsen UHF and 800 MHz models handle a full 150 watts.

### GROUND PLANE REQUIREMENTS

Larsen Kūlrod Antennas work against a suitable ground plane. Adequate reflected power may be had with a single ground element as small as 19" long and 1/2" wide. However, you can improve performance by making the ground plane larger.

### ANTENNA LOCATION

The best location for a mobile antenna is on the vehicle's roof top. Next best is the rear fender. In this case you can minimize shadowing by the forward part of the car by mounting the antenna well to the rear. A third option is the trunk lid.

### CAUTION

Under some conditions, low band antennas (27 to 54 MHz) on a trunk lid can result in an undesirable resonance with excessively high VSWR at some frequencies.

### ADJUSTING TO FREQUENCY

Just cut the rod to the correct length for the operating frequency (see cutting chart).



### SHOCK SPRING

Larsen's narrow diameter shock spring is made of electropolished stainless steel and is positively shorted to keep performance loss to an absolute minimum. Shock springs are standard on 800 MHz gain antennas and optional for VHF and UHF antennas. Rod cutting information is provided for with-spring and without-spring options.

### CUTTING THE ROD

The Larsen Kūlrod whip is constructed of the highest grade 17-7PH stainless steel, to provide all-weather protection and maximum radiation efficiency. It is hard to cut. For best results use the Larsen CTR Rod Cutter, the edge of a grinding wheel, or the sharp corner of a file. Use the file to score the rod around its circumference so it may be snapped off with a pair of pliers.

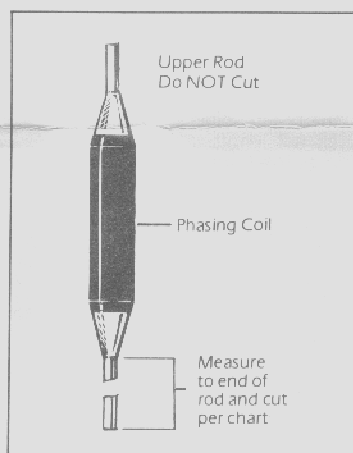
### MEASURING THE ROD LENGTH — LOW BAND AND HIGH BAND

Each Larsen Antenna whip in these frequencies is 49" long. Use the rule printed on the edge of this folder to measure the precise amount to cut off according to the cutting chart. You will then have the right whip length for the operating frequency.

Example: For 42 MHz operation, measure 2-1/2" with rule from the base end and cut off. The remaining 46-1/2" whip length will be correct for 42 MHz.

### MEASURING THE ROD LENGTH — UHF ANTENNAS

The dimensions shown on the cutting chart are for the rod **below** the phasing coil. The rod **above** this coil is correct as it comes from the factory. **Do not change this upper rod.** The rod length indicated on the chart refers to the length of the rod from the bottom of the phasing coil to the end of the rod. Be sure to be precise for best results.



# NLA PERMANENT MOUNTING INSTRUCTIONS

**Larsen® NLA Series mount or Larsen NLA Kūlrod® antenna on other snap-in style mounts.**

**NLA-K:** Follow steps 1-14 for complete, low silhouette installation of your Larsen NLA Antenna Kit.

**Larsen NLA Kūlrod Antenna on other mounts:** Follow steps 1, 2 and 6 thru 14. Fits all G.E., RCA, A.S.P., Amphenol, Marconi and similar mounts.

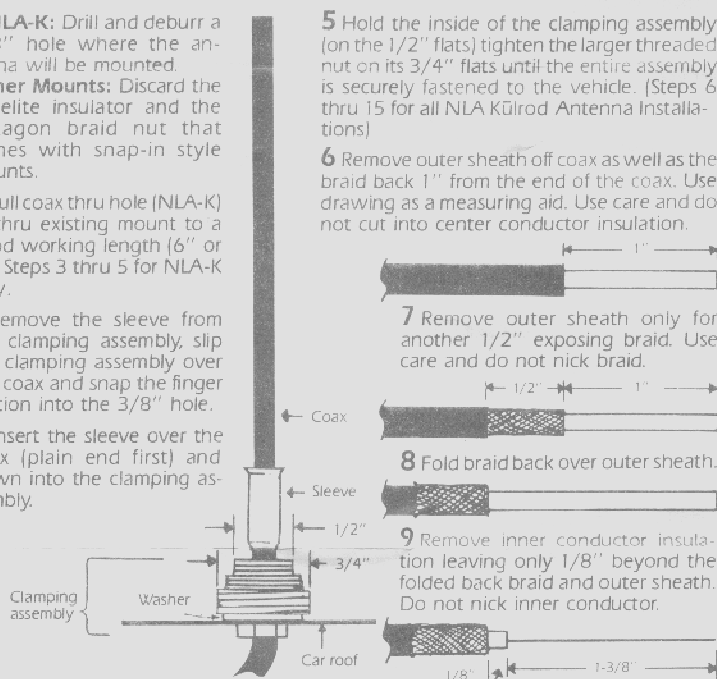
**1 NLA-K:** Drill and deburr a 3/8" hole where the antenna will be mounted.

**Other Mounts:** Discard the bakelite insulator and the hexagon braid nut that comes with snap-in style mounts.

**2** Pull coax thru hole (NLA-K) or thru existing mount to a good working length (6" or so). Steps 3 thru 5 for NLA-K only.

**3** Remove the sleeve from the clamping assembly, slip the clamping assembly over the coax and snap the finger section into the 3/8" hole.

**4** Insert the sleeve over the coax (plain end first) and down into the clamping assembly.



**5** Hold the inside of the clamping assembly (on the 1/2" flats) tighten the larger threaded nut on its 3/4" flats until the entire assembly is securely fastened to the vehicle. (Steps 6 thru 15 for all NLA Kūlrod Antenna Installations)

**6** Remove outer sheath off coax as well as the braid back 1" from the end of the coax. Use drawing as a measuring aid. Use care and do not cut into center conductor insulation.



**7** Remove outer sheath only for another 1/2" exposing braid. Use care and do not nick braid.



**8** Fold braid back over outer sheath.



**9** Remove inner conductor insulation leaving only 1/8" beyond the folded back braid and outer sheath. Do not nick inner conductor.

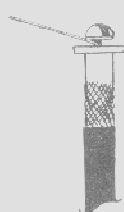


**10** Slip teflon insulator, supplied with Larsen Antenna, over inner conductor and the remaining inner conductor insulation. Be sure the inner conductor is not exposed.

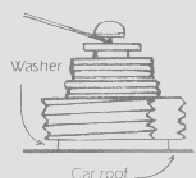
**11** Holding the teflon insulator firmly against the inner conductor insulation pull up on the inner conductor and fold it over to hold the insulator in place. Insert the silver contact pin to its full length alongside the center conductor and so the top of the contact pin makes a solid contact with the center conductor. Considerable pressure may be required. A couple of taps with a light tool will help.



**12** Push the braid up and over the teflon insulator. Be sure no strands of braid go beyond the lip of the insulator.



**13** Insert the completed assembly into the mounting (clamping assembly) on the vehicle. (Instructions supplied by the mount manufacturer should have been followed in fastening the mounting to the vehicle.) The braid and insulator assembly is meant to fit snugly in the sleeve, so considerable pressure will be required to push it in. The completed assembly (at this point) is shown in the drawing.



**14** Trim off excess of inner conductor. A knife or sharp diagonal cutting pliers works well. Put weather protection neoprene washer supplied with the Larsen Antenna over the mount. Be sure it sets firmly on the vehicle.

## ATTACHING ANTENNA TO MOUNT

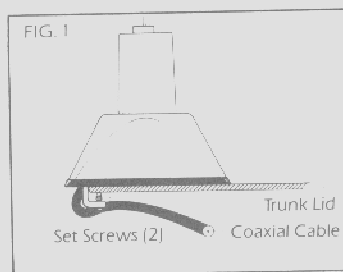
Screw Larsen NLA Antenna loading coil on to base. Be careful about cross threading. Tighten firmly against neoprene weather-proof washer.

# TEMPORARY MOUNTING INSTRUCTIONS

## TLM SERIES

### TRUNK LID MOUNT — For superior ground plane performance on a trunk lid.

1. Center the TLM mount on the lip of the truck lid nearest the rear window.
2. Tighten the two set screws with the supplied allen wrench, sufficiently to break through the paint and establish a good ground connection (Fig. 1).

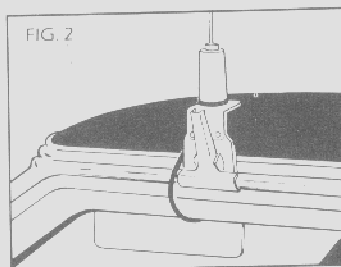


3. Route the coaxial cable from the trunk area to the radio. Install the PL-259 connector (supplied with TLM kits). Connect antenna cable to radio.

## GC SERIES

### GUTTER CLAMP MOUNT — Provides a positive ground plane for full antenna efficiency.

1. Attach Larsen KÜlrod antenna to GC mount. Tighten firmly but do not use excess pressure.
2. Clamp mount to the side gutter of your car or truck (Fig. 2).

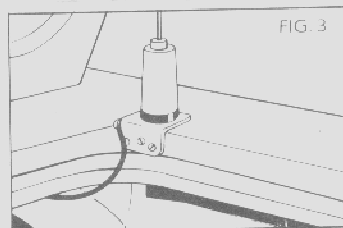


3. Route coaxial cable through the window to the radio. Install the PL-259 connector (supplied). Connect antenna cable to radio.

## TMB SERIES

### TRUNK GUTTER MOUNT — Simple installation with a stainless steel "L" bracket.

1. Position Larsen Trunk Gutter Mount on inside of the trunk gutter or the engine hood as shown (Fig. 3).
2. Tighten three stainless steel self-tapping screws with supplied allen wrench.

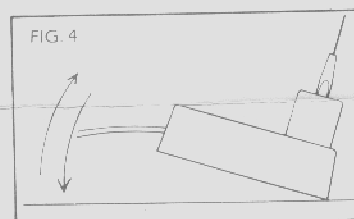


3. Route coaxial cable from the trunk area to the radio. Install the PL-259 connector (supplied). Connect antenna cable to radio.

## MM SERIES

### MAGNETIC MOUNT — Super Hold with minimal chance of scratching painted surfaces.

1. Thoroughly clean and remove all dust and gritty material from the surface upon which the mount is to be placed, and from the aluminum surface of the mount.
2. Place short end of the mount forward to provide the greatest resistance to wind and obstructions.
3. Do not slide the mount once it is in place. Sliding would greatly increase the risk of scratching the painted surface.



4. Start the mount with the short side down. Use the antenna as a handle. Gently pivot the mount down until it snaps into place. (Fig. 4).
5. To remove mount, reverse the procedure.

The mount may be used on some vinyl roofs, with a reduction in holding power. Some loss in electrical capacitance will occur which may upset the operation of the antenna at some frequencies.

# ROD CUTTING CHARTS FOR NLA SERIES ANTENNAS

## QUARTER WAVE

Oper. Freq.	Rod Length (Inches)	(cm.)
<b>NLAQ-52</b>		
52 MHz	54-1/2"	138.43
54 MHz	53-1/2"	135.89
56 MHz	52-1/2"	133.35
58 MHz	51-1/2"	130.81
60 MHz	50-1/2"	128.27
62 MHz	48"	121.92
64 MHz	46-1/4"	117.475
66 MHz	45"	114.3
68 MHz	43-1/4"	109.855
70 MHz	42"	106.68
72 MHz	41"	104.14
74 MHz	40-1/2"	102.87
76 MHz	39-3/4"	100.965
78 MHz	38"	96.52
80 MHz	36-1/2"	92.71
82 MHz	35-1/2"	90.17
84 MHz	34-3/4"	88.265
86 MHz	34-1/4"	86.995
88 MHz	33"	83.82
<b>NLAQ-88</b>		
88 MHz	33"	83.82
90 MHz	32"	81.28
92 MHz	31"	78.74
94 MHz	30"	76.2
96 MHz	29-1/2"	74.93
98 MHz	29"	73.66
100 MHz	28-1/2"	72.39
102 MHz	28"	71.12
104 MHz	27-1/2"	69.85
106 MHz	27"	68.58
108 MHz	26"	66.04
110 MHz	25"	63.5
112 MHz	24-1/2"	62.23
114 MHz	24-1/4"	61.595
116 MHz	24"	60.96
118 MHz	23-1/4"	59.055
120 MHz	23"	58.42
122 MHz	22-1/2"	57.15
124 MHz	22-1/4"	56.515
126 MHz	22"	55.88
128 MHz	21-1/2"	54.61
130 MHz	21-1/4"	53.975
132 MHz	20-1/2"	52.07
134 MHz	20-1/4"	51.435
136 MHz	20"	50.8
<b>NLAQ-</b>		
140 MHz	19-3/4"	50.165
144 MHz	19-1/2"	49.53
150 MHz	19-1/4"	48.895
155 MHz	18-7/8"	47.942
158 MHz	18-1/2"	46.99
161 MHz	18-1/8"	46.037
164 MHz	17-3/4"	45.085
168 MHz	17-3/8"	44.132
172 MHz	17"	43.18
176 MHz	16-5/8"	42.227
400 MHz	7"	17.78
410 MHz	6-3/4"	17.145
420 MHz	6-5/8"	16.827
430 MHz	6-3/8"	16.192
440 MHz	6-1/8"	15.557
450 MHz	6"	15.24
460 MHz	5-3/4"	14.605
470 MHz	5-5/8"	14.287
480 MHz	5-9/16"	14.127
490 MHz	5-1/2"	13.97
500 MHz	5-3/8"	13.652

## LOW BAND

Oper. Freq.	Rod Length (Inches)	(cm.)
<b>27-31 MHz Range</b>		
26.5 MHz	49"	124.46
27.0 MHz	48"	121.92
28.0 MHz	45"	114.30
29.0 MHz	40"	101.60
30.0 MHz	38"	96.52
<b>30-35 MHz Range</b>		
30.0 MHz	49"	124.46
31.0 MHz	46"	116.84
32.0 MHz	43"	109.22
33.0 MHz	40"	101.60
34.0 MHz	37"	93.98
35.0 MHz	34"	86.36
<b>34-40 MHz Range</b>		
34.0 MHz	49"	124.46
35.0 MHz	47"	119.38
36.0 MHz	44-1/2"	113.03
37.0 MHz	42"	106.68
38.0 MHz	40"	101.60
39.0 MHz	37-1/2"	95.25
40.0 MHz	35-1/2"	90.17
<b>40-50 MHz Range</b>		
40.0 MHz	49"	124.46
42.0 MHz	46-1/2"	118.11
44.0 MHz	42-1/2"	107.95
46.0 MHz	40"	101.60
48.0 MHz	37"	93.98
50.0 MHz	35"	88.90
<b>47-54 MHz Range</b>		
47.0 MHz	49"	124.46
48.0 MHz	47-1/2"	120.65
49.0 MHz	46-1/2"	118.11
50.0 MHz	45-1/2"	115.57
51.0 MHz	44-1/4"	112.395
52.0 MHz	43-1/2"	110.49
53.0 MHz	42-1/2"	107.95
54.0 MHz	41-1/2"	105.41

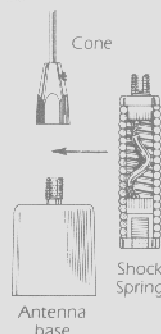
## HIGH BAND

Oper. Freq.	Rod Length (Inches)	(cm.)
<b>144-174 MHz Range</b>		
144 MHz	49"	124.46
146 MHz	48-3/4"	123.825
148 MHz	48-1/2"	123.19
150 MHz	46-3/4"	118.745
152 MHz	46"	116.84
154 MHz	45-1/2"	115.57
156 MHz	45"	114.30
158 MHz	44"	111.760
160 MHz	43-1/4"	109.855
162 MHz	42-3/4"	108.585
164 MHz	42"	106.680
166 MHz	41-1/4"	104.775
168 MHz	40-3/4"	103.505
170 MHz	40"	101.60
172 MHz	39-1/2"	100.330
174 MHz	39"	99.060
<b>200-265 MHz Range</b>		
200 MHz	37-1/2"	95.250
205 MHz	36-1/2"	92.710
210 MHz	35"	88.90
215 MHz	33-3/4"	85.775
220 MHz	32"	81.280
225 MHz	31"	78.740
230 MHz	30"	76.20
235 MHz	29-1/2"	74.930
240 MHz	29"	73.660
245 MHz	28"	71.120
250 MHz	27-1/4"	69.215

For NLA-150 antennas mfg. w/o provision for spring.

### New NLA-150 Antennas with Shock Spring Option

This cutting chart applies only to NLA-150 antennas designed to accept a shock spring. Note these antenna elements now come with a metal cone that screws either directly on the base or on the shock spring (see adjacent drawing). The cutting lengths are based on inserting the rod as far as possible into the spring or base loading coil. This gives the user approximately 3/4" of adjustment in case the rod was inadvertently cut too short.



Oper. Freq.	W/O Spring (Inches)	(cm.)	With Spring (Inches)	(cm.)
<b>144-174 MHz Range</b>				
144 MHz	49"	124.46	46-5/8"	118.43
146 MHz	48-1/2"	123.19	45-1/2"	115.57
148 MHz	47-5/8"	120.97	44-3/4"	113.67
150 MHz	46-3/4"	118.75	44"	111.76
152 MHz	46"	116.84	43"	109.22
154 MHz	45-1/2"	115.57	42"	106.68
156 MHz	44-5/8"	113.35	41-1/2"	105.41
158 MHz	44"	111.76	40-3/4"	103.51
160 MHz	43-1/4"	109.86	40-1/8"	101.92
162 MHz	42-3/8"	107.63	39-1/8"	99.38
164 MHz	41-5/8"	105.73	38-1/4"	97.16
166 MHz	41-1/4"	104.78	37-3/4"	95.89
168 MHz	40-5/8"	103.19	37-1/8"	94.30
170 MHz	40"	101.60	36-5/8"	93.03
172 MHz	39-1/4"	99.70	35-5/8"	90.49
174 MHz	38-5/8"	98.11	35-1/8"	89.22

## UHF BAND

Oper. Freq.	W/O Spring (Inches)	(cm.)	With Spring (Inches)	(cm.)
<b>405-420 MHz Range</b>				
405 MHz	11"	27.94	9-5/8"	24.447
410 MHz	10-5/8"	26.987	9"	22.86
415 MHz	10-1/4"	26.035	8-1/2"	21.59
420 MHz	9-7/8"	25.082	8-1/8"	20.64
<b>420-440 MHz Range</b>				
420 MHz	11-1/8"	28.257	9-7/8"	25.082
425 MHz	10-3/4"	27.305	9-3/8"	23.812
430 MHz	10-1/2"	26.67	9"	22.86
435 MHz	9-7/8"	25.082	8-1/2"	21.59
440 MHz	9-3/4"	24.765	8-3/8"	21.272
<b>440-460 MHz Range</b>				
440 MHz	11"	27.94	9-1/4"	23.495
445 MHz	10-1/2"	26.67	8-7/8"	22.542
450 MHz	10"	25.4	8-3/8"	21.272
455 MHz	9-5/8"	24.447	7-7/8"	20.00
460 MHz	9-1/4"	23.495	7-1/2"	19.05
<b>450-470 MHz Range</b>				
450 MHz	10-3/8"	26.352	8-5/8"	21.907
455 MHz	9-3/4"	24.765	8-1/8"	20.637
460 MHz	9-3/8"	23.812	7-5/8"	19.367
465 MHz	9"	22.86	7-1/4"	18.415
470 MHz	8-5/8"	21.907	6-3/4"	17.145
<b>470-490 MHz Range</b>				
470 MHz	9-3/4"	24.765	7-7/8"	20.00
475 MHz	9-1/8"	23.177	7-3/8"	18.732
480 MHz	8-3/4"	22.225	7"	17.78
485 MHz	8-3/8"	21.272	6-3/8"	16.192
490 MHz	8"	20.32	6"	15.24
<b>490-512 MHz Range</b>				
490 MHz	9-1/8"	23.177	7"	17.78
495 MHz	8-3/4"	22.225	6-1/2"	16.51
500 MHz	8-3/8"	21.272	6-1/8"	15.557
505 MHz	8"	20.32	5-3/4"	14.605
512 MHz	7-1/2"	19.05	5-3/8"	13.652

