

403 **CHEAP** DIY Homebrew Wire Antennas for Ham Radio

Many Thanks to Iulian Rosu YO3DAC / VA3IUL,
For a GREAT Compilation! PDF by K3RRR.com

Iulian Rosu YO3DAC / VA3IUL,
<http://www.qsl.net/va3iul>

Note: Dimensions of the antennas presented below are either in: feet ('), inch ("), meters (m), or centimeters (cm)

- | | |
|--|---|
| 01 - Tee Antenna | 201 - FD4 Windom Antenna for 80m, 40m, 20m, 10m |
| 02 - Half-Lambda Tee Antenna | 202 - Two Elements Phased Delta Loop for 40m |
| 03 - Twin-Led Marconi Antenna | 203 - Three Elements Wire Yagi for 10m |
| 04 - Swallow-Tail Antenna | 204 - Low Radiation Angle Full-Wave Loop Antenna for 80m |
| 05 - Random Length Radiator Wire Antenna | 205 - Collinear Antenna Gain=3dB for 2m |
| 06 - Windom Antenna | 206 - X-Ray Monoband Antenna Gain=6.5dBd |
| 07 - Windom Antenna - Feed with coax cable | 207 - Broadside Collinear Curtain Array for 20m |
| 08 - Quarter Wavelength Vertical Antenna | 208 - Shrunk Loop Antenna for 80m, 40m |
| 09 - Folded Marconi Tee Antenna | 209 - $\lambda/3$ Multiband Dipole for 40m, 20m, 17m, 15m, 13m, 10m |
| 10 - Zeppelin Antenna | 210 - K3LR Sloper Antenna Gain=3dB for 160m |
| 11 - EWE Antenna | 211 - Mini Folded Vertical Monopole Antenna for 160m, 80m, 40m |
| 12 - Dipole Antenna - Balun | 212 - Three Band Dipole for 80m, 40m, 20m |
| 13 - Multiband Dipole Antenna | 213 - Stub Matched Dipole Antenna |
| 14 - Inverted-Vee Antenna | 214 - Inverted-Vee Antenna with Bazooka Match |
| 15 - Sloping Dipole Antenna | 215 - Multiband Long Wire Antenna for 40m, 20m, 15m, 10m |
| 16 - Vertical Dipole | 216 - Converted Vee Antenna for 80m, 40m |
| 17 - Delta Fed Dipole Antenna | 217 - Swiss Quad Antenna for 20m, 15m, 10m |
| 18 - Bow-Tie Dipole Antenna | 218 - Japanese Quad Antenna for 20m, 15m, 10m |
| 19 - Bow-Tie Folded Dipole Antenna for RX | 219 - Seven-Elements Triangle Beam Antenna for 20m |
| 20 - Multiband Tuned Doublet Antenna | 220 - Log Periodic Wire Antenna for 40m |
| 21 - G5RV Antenna | 221 - Three-Elements 90-degrees Wire Beam for 20m |
| 22 - Wideband Dipole Antenna | 222 - Two-Elements Wire Beam for 20m |
| 23 - Wideband Dipole for Receiving | 223 - Suitcase-Fit Dipole Antenna for 80m, 40m, 20m |
| 24 - Tilted Folded Dipole Antenna | 224 - Multiband Coaxial Dipole for 80m, 40m |
| 25 - Right Angle Marconi Antenna | 225 - Vertical Log Periodic Antenna for 80m, 40m |
| 26 - Linearly Loaded Tee Antenna | 226 - Inverted Vertical Log Periodic Antenna for 40m |
| 27 - Reduced Size Dipole Antenna | 227 - Double Extended Zepp Antenna Gain=7dB for 15m |
| 28 - Doublet Dipole Antenna | 228 - Double Lazy-H Antenna G=10dB for 70cm |
| 29 - Delta Loop Antenna | 229 - Wire Log Periodic Antenna G=12dB for 15m, 20m |
| 30 - Half Delta Loop Antenna | 230 - Five-Elements Vertical Log Periodic for 80m, 40m, 20m |
| 31 - Collinear Franklin Antenna | 231 - Sloping Delta Loop Antenna for 40m |
| 32 - Four Element Broadside Antenna | 232 - Doublet Antenna for 160m |
| 33 - The Lazy-H Array Antenna | 233 - Log Periodic Wire Beam for 40m |
| 34 - Sterba Curtain Array Antenna | 234 - G3LDO Wire Beam Antenna for 20m, 15m, 10m |
| 35 - T-L DX Antenna | 235 - Phased Delta Loop Array for 20m |

- 36 - 1.9 MHz Full-wave Loop Antenna
- 37 - Multi-Band Portable Antenna
- 38 - Off-center-fed Full-wave Doublet Antenna
- 39 - Terminated Sloper Antenna
- 40 - Double Extended Zepp Antenna
- 41 - TCFTFD Dipole Antenna
- 42 - Vee-Sloper Antenna
- 43 - Rhombic Inverted-Vee Antenna
- 44 - Counterpoise Longwire
- 45 - Bisquare Loop Antenna
- 46 - Piggyback Antenna for 10m
- 47 - Vertical Sleeve Antenna for 10m
- 48 - Double Windom Antenna
- 49 - Double Windom for 9 Bands
- 50 - Collinear Trap Antenna
- 51 - Short Dipole Antenna for 40m - 80m - 160m
- 52 - Center Fed-Zepp Antenna for 80m - 40m
- 53 - All Bands Antenna
- 54 - All-Bands Dipole Antenna
- 55 - Multiband Z Antenna
- 56 - Multiband Dipole Antenna
- 57 - Five-Bands No-Tuner Antenna
- 58 - Dualband Full-wave Loop Antenna for 80m-40m
- 59 - Loop Antenna for 10m
- 60 - Lazy Quad Antenna for 10m
- 61 - Tri-band Delta Loop Antenna for 80m - 40m - 30m
- 62 - Dual-band Loop Antenna for 30m - 40m
- 63 - Wire-Beam Antenna for 80m
- 64 - Dual-Band Sloper Antenna
- 65 - Inverted-V Beam Antenna for 30m
- 66 - ZL-Special Beam Antenna for 15m
- 67 - Half-Sloper Antenna for 160m
- 68 - Two-Bands Half Sloper for 80m - 40m
- 69 - Linear Loaded Sloper Antenna for 160m
- 70 - Super-Sloper Antenna
- 71 - Tower Pole as a Vertical Antenna for 80m
- 72 - Clothesline Antenna
- 73 - Curtain Zepp Antenna for 160m, 80m, 40m
- 74 - Collinear Array Antenna for 40m, 30m, 20m
- 75 - 160m Inverted Delta Loop
- 76 - Half Rhombic Unidirectional Vertical for 20m to 6m
- 77 - Capacitance Loaded Vertical Antenna for 160m
- 236 - Dual Band V-dipole for 80m, 40m
- 237 - Collinear Array 5dB-Gain for 15m
- 238 - Two-Band Quad Loop Antenna 80m, 40m
- 239 - K7CW Quad Antenna
- 240 - Broadband Short Dipole for 80m
- 241 - Off-Center Fed Dipole for 40m, 20m, 10m
- 242 - Broadband Sloper Antenna for 80m
- 243 - Two-Frequency Dipole Antenna for 80m
- 244 - Top Loaded Vertical Antenna for 160m
- 245 - Two Loop Beam Antenna for 20m, 15m
- 246 - Corner-Fed Delta Loop Antenna for 80m, 40m, 20m
- 247 - Loaded Delta Loop Antenna for 40m, 20m
- 248 - Compact Size Dipole for 80m
- 249 - JAWS 3dB Gain Antenna for 40m
- 250 - Inverted-V Antenna for 160m
- 251 - Lazy-U Antenna for 160m
- 252 - AF3V Compact Antenna for 160m
- 253 - Hot Beam Wire Antenna for 40m
- 254 - Sloping Delta Loop for 40m
- 255 - K6FD Multiband Antenna with T-tuner
- 256 - Dual Band Dipole Antenna for 17m, 10m
- 257 - Compact Travel Dipole Antenna for 10m, 15m, 20m
- 258 - End-Fire Antenna for 160m, 80m, 40m, 20m
- 259 - Four Band Loop for 40m, 20m, 15m, 10m
- 260 - Carolina Windom Antenna for 80 to 10m
- 261 - Shortened Loaded Dipole for 40m
- 262 - Shortened Loaded Dipole for 80m
- 263 - Low Radiation Angle Inverted Delta Loop for 80m
- 264 - Compact Dipole Antenna for 40m, 15m
- 265 - Vertical Delta Loop for 40m to 10m
- 266 - Delta Loop Antenna for 17m
- 267 - Bi-Square Beam Gain=3dBd for 17m
- 268 -Trap Dipole Antenna for 17m,13m
- 269 - Hanging Unipole Antenna for 160m, 80m
- 270 - Wideband Sloping Vee Antenna - 30m to 6m
- 271 - 5/8 Wavelength Antenna
- 272 - C-Pole Vertical Antenna
- 273 - Bobtail Antenna for 30m
- 274 - Bobtail Antenna for 40m
- 275 - Two Elements Vertical Loop Antenna for 40m
- 276 - Double Extended Zepp Antenna for 40m
- 277 - Reversible Moxon Flip Beam for 40m

- 78 - Fan Dipole Antenna for 80m to 6m
- 79 - Wire Ground Plane Antenna
- 80 - Inverted Delta Loop Antenna for 160m
- 81 - Inverted-L for 160m
- 82 - 300ohm-Ribbon Dual Band Dipole
- 83 - Tri-Band Beam for 20m, 15m, 10m
- 84 - Mini-Horse Yagi Antenna
- 85 - Backpack J-Pole Antenna for 10m, 6m, 2m
- 86 - Fan-Dipole Antenna for 80m, 40m, 20m
- 87 - Capacity Tuned Folded Loop Antenna for 20m
- 88 - Indoor Loop Antenna for 80m to 30m
- 89 - Indoor Loop Antenna for 80m
- 90 - Double-Delta Antenna 80m and 40m
- 91 - Inductance-Loaded Shortened Dipole for 160m
- 92 - V-Beam Antenna for 15m
- 93 - Picnic Vertical Wire Antenna
- 94 - Laid-Back Quad Antenna for 80m
- 95 - Phased Loop Antenna
- 96 - Loop Antenna for TX for 160m
- 97 - Morgain-Dipole Antenna for 160m and 80m
- 98 - ZL-Special for 20m, 15m, 10m
- 99 - Biconical Antenna
- 100 - Directive Delta-Birdcage Antenna for 20m to 10m
- 101 - Dual Polarization Antenna for 80m and 40m
- 102 - Directive 300-ohm-Ribbon Folded Dipole for 15m
- 103 - Miniature Directive Antenna for 10m
- 104 - Biquad Antenna 12dBi-Gain for 2.4GHz
- 105 - Dual-Rhomboid Antenna for 435MHz to 870MHz
- 106 - Double-Bazooka Antenna for 80m
- 107 - J-Style Antenna
- 108 - Vertical / Horizontal / Circular Polarization Antenna
- 109 - Coax Inverted-L Antenna for 80m
- 110 - Indoor Compact Loop Antenna for 80m
- 111 - Helix Antenna
- 112 - Novice Vertical Antenna for 80m, 40m, 15m, 10m
- 113 - Stub-Loaded Shortened Dipole for 80m
- 114 - Six-Band Wire-Stub Trap Antenna for 40m-10m
- 115 - Multiband Half-Wave Delta-Loop Antenna
- 116 - Hybrid Vee for 20m, 17m
- 117 - Six-Shooter Array Antenna, Gain=7.5dB
- 118 - Multiband Ground-Plane Antenna for 10m, 15m, 20m
- 119 - Wire Superbeam Antenna for 10m, 15m, 20m
- 120 - Spitwire Antenna for 40m
- 278 - Spitwire Antenna for 40m
- 279 - Fork Antenna for 40m
- 280 - Veebeam Antenna 3dB-Gain for All Bands
- 281 - Vertical Moxon Antenna for 10m
- 282 - Half-Square Antenna for 30m
- 283 - Rotatable Vertical Delta Loop for 20m
- 284 - Mini-Horse Antenna 10dB-Gain for 40m-to-2m
- 285 - Compact Moxon Antenna 5dB-Gain for 40m
- 286 - Two Elements Sloping Delta Loop 8dB-Gain for 10m
- 287 - Two Elements Phased Vertical Antenna 3dB-Gain for 40m
- 288 - Bird Yagi Wire Antenna G4ZU for 10m
- 289 - Sardine Tin Opener (STO) Antenna for 160m,80m,40m
- 290 - Vertical Phased Endfire Antenna for 80m
- 291 - Vertical Broadside Array for 80m
- 292 - Dual-Band Crossed Dipole Antenna for 40m, 20m
- 293 - 2 element Vertical Delta Loop Beam for 15m,10m
- 294 - Folded Coaxial Dipole Antenna for 80m to 2m
- 295 - VK2ABQ Tribander 4dBd-Gain for 20m,15m,10m
- 296 - Folded Long-Wire Antenna for 40m
- 297 - Wine Bottle Vin-Plonk Antenna G2BZQ for 20m
- 298 - Guy-Wire Doublet Tri-Band Antenna for 10m,15m,20m
- 299 - Two-Element Vertical Delta Loop Beam Gain-4dB
- 300 - Novi-Loop Antenna
- 301 - K3BM Sloping Delta Loop Antenna for 160m
- 302 - Vertical Delta Loop GW7AVV for 4m
- 303 - Delta Mono-Loop Antenna DJ0IP for 40m
- 304 - Multiband Vertical Delta Loop M0PLK for 30m to 10m
- 305 - Inverted Dipole Delta Loop Antenna for 40m,80m,160m
- 306 - Two Element Wire Beam OK1ATP for 160m
- 307 - Quad Fixed Beam Antenna for 20m
- 308 - Open Loop RX Antenna for 160m
- 309 - Hybrid Multiband Antenna for 160m to 10m
- 310 - Long Wire Antenna GW0GHF for 6m
- 311 - Random Delta Loop KC8AON for 80m to 10m
- 312 - Broadband Butterfly Terminated Dipole KQ6XA for 80m to 10m
- 313 - Crossed Dipole Antenna for 23cm
- 314 - The Ultimate Eight Bander Antenna
- 315 - Simple DX Wire Antenna LA5UF
- 316 - Elongated Quad-Loop Antenna G3BDQ
- 317 - Bobtail-Curtain Antenna for 20m,40m
- 318 - Vertical Tee Antenna
- 319 - Three Versions of Wide Band Dipoles

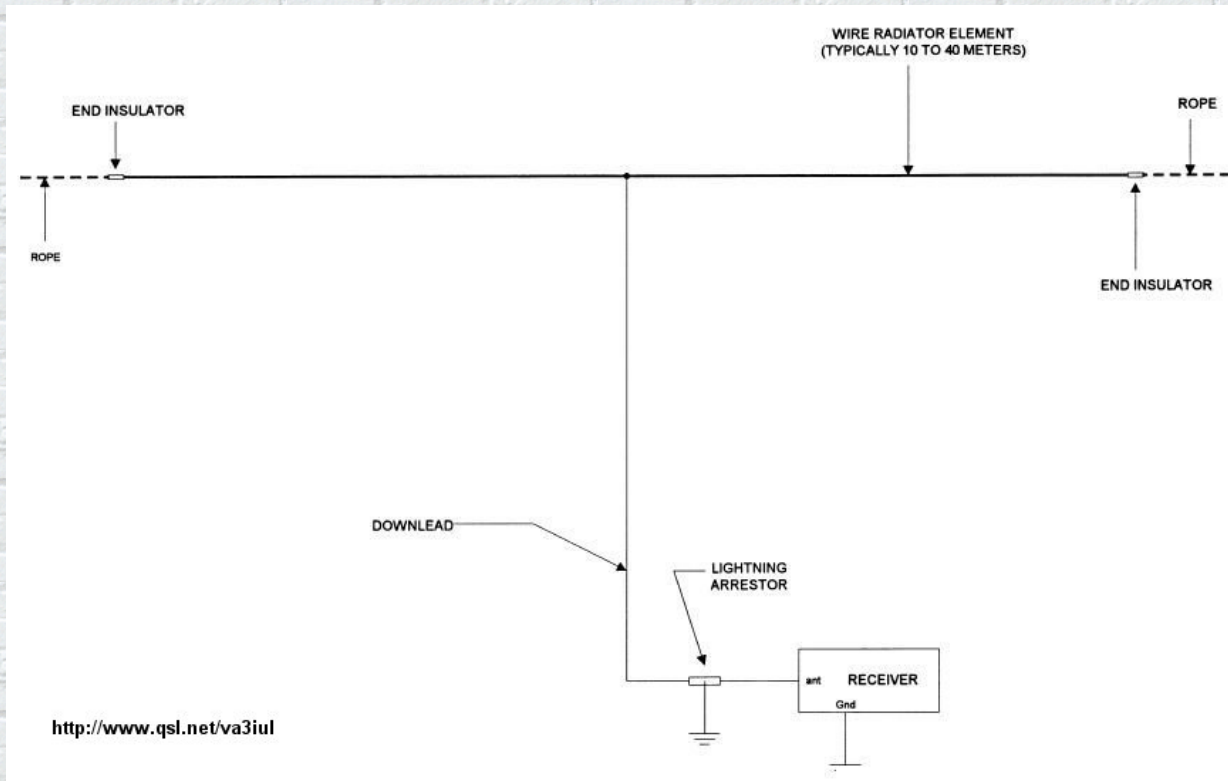
120 - Two Elements Delta-Loop Antenna
121 - Sterba Curtain Antenna
122 - Half-Wave Vertical Zepp Antenna
123 - Lazy-Loop Antenna for 40m
124 - Terminated Folded Dipole for 80m, 40m
125 - Short-Fat Antenna for 15m
126 - Cobra Antenna for 80m
127 - Log-Periodic Wire Antenna for 20m, 15m, 10m
128 - 5-Element Log-Periodic Vertical Antenna for 80m, 40m, 20m
129 - 2m Vertical Wire Antennas
130 - Earth-Mover Inverted-V Antenna for 40m
131 - Coax-Cable Collinear Antennas
132 - Double Bobtail Antenna for 20m
133 - Collinear Zepp Antenna
134 - Taylor Vee Antenna for 20m
135 - Collinear Vertical Antenna 6dB-Gain for 2m, 1.3m, 73cm
136 - Bi-Loop Antenna for 20m
137 - Wire Beam 6dBd-Gain for 10m
138 - Sloping Diamond Antenna 4dB-Gain for 40m
139 - Twisted Loop Antenna for 160m
140 - DX RX Loop Antenna for 160m
141 - Hentenna 3dB-Gain for 10m, 6m, 2m
142 - VK2AAR Wire Antenna for 20m
143 - 2-Elements Quad Antenna for 6m
144 - Hula-Loop Bidirectional 6dB-Gain Antenna for 17m
145 - Moxon Rectangle Beam for 15m-10m
146 - Double-D Beam 4dB-Gain
147 - KE4PT OCEF All-Band Dipole
148 - Wire Quad Antenna for 40m
149 - Inclined Dipole Antenna for 80m, 40m
150 - Pyramidal Wire Antenna for 80m
151 - Random Wire Antenna All Bands
152 - Multiband Dipole Antenna for 80m, 40m, 15m, 10m
153 - Slim Jim Wire Antenna for 4m
154 - Delta Loop for 6m
155 - Re-Configurable Antenna for 160m and 80m
156 - Very Low Frequency Inverted-L Antenna
157 - Reduced Size Half Sloper Antenna for 160m
158 - Tree-Mounted HF Antenna
159 - Multiband Vertical Antenna for 80m, 40m, 20m
160 - Marconi Antenna for 136 kHz
161 - Simple Killer Antenna for 40m

320 - All HF Bands Loop Antenna G12FHN
321 - Triangle Sloper 3dB-Gain G8PO for 160m,80m,40m
322 - Quad Window Antenna for 2m
323 - Hamtenna VK6VH for 80m
324 - Monopole Antenna Loaded with Folded Dipole for 23cm
325 - Lazy-H Antenna for 20m,17m,15m,12,10m
326 - Multee Antenna for 160m,80m,40m
327 - Marconi Ribbon Line Antenna for 80m
328 - WARC Tri-Band Antenna for 30m,17m,12m
329 - Two-Element Delta Loop Beam for 20m,10m
330 - Bidirectional Array Antenna W8JK for 20m to 10m
331 - High Gain Rhombic Antenna for 70cm
332 - Inverted Tree Delta Loop for 40m
333 - Triangular Multiband Loop Antenna for 80m to 10m
334-T-Antenna with Sloping Elements for 40m,20m
335 - Vertically Elongated Loop Antenna for 15m
336 - Short Helical Wound Dipole for 15m
337 - Quadplane Antenna
338 - Hibernating Directive Dipole for 20m
339 - H-Elongated V-Polarized Quadloop Antenna for 160m,80m,40m
340 - Dual Band $\lambda/4$ Sloper Antenna for 80m,40m
341 - Broadband Traveling-Wave Dipole for 80m to 10m
342 - Jaws Antenna for 40m
343 - Compact Double-D Antenna
344 - Portable Spiderbeam for 20m,15m,10m
345 - All Bands Cone Antenna
346 - Modified G5RV Antenna for 160m
347 - Vertically Polarized Multiband Antenna for 160m,80m,40m
348 - Half-Trap DX Antenna for 80m,40m
349 - WARC Bands Trapped Dipole for 80m,40m,30m,17m,12m
350 - T2FD Short Dipole Antenna for 80m,40m,20m
351 - Half Delta Loop Antenna VE2CV for 160m
352 - Grounded End-Fed Wire Antenna for 160m
353 - Folded Dipole Coax Feeding
354 - High Gain Rhombic Antenna
355 - Long Wire Antenna for 6m
356 - Kite Antennas
357 - Multiband Windom with Balun for 80m to 10m
358 - Portable Collinear Antenna GM3LBX for 2m
359 - Two-Elements Loaded Yagi for 20m
360 - Horizontal Plane TX Loop Antenna for 40m
361 - Long Wire Antenna W3RW for 10m,6m

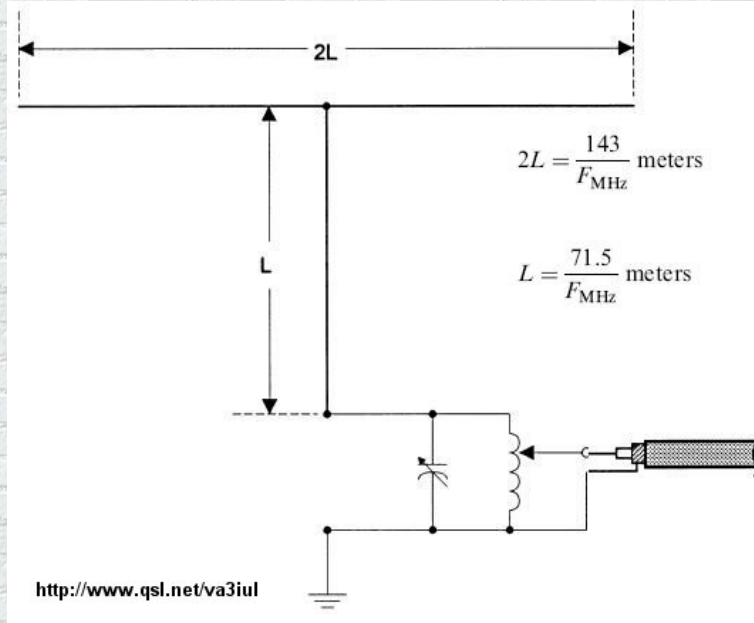
162 - Stub-Directed V Antenna for 80m
163 - KT0NY Over-and-Under DX Antenna for 20m
164 - Horizontal Loop Antennas
165 - Ribbon J-Pole for 2m
166 - Dual Band Ribbon J-Pole for 2m, 70cm
167 - Square Vertical Loop Antenna for 40m
168 - Tri-Band Quad Antenna for 20m, 15m, 10m
169 - 3D Quad Antenna for 80m, 40m, 20m, 15m, 10m
170 - Sloping Wire Antenna for 30m, 20m, 17m, 15m, 12m, 10m
171 - Broadband Dipole Antenna with Coaxial Resonator for 80m
172 - Resonant Feedline Dipole Antenna for 80m
173 - Dual-Band Loading Wire Antenna for 80m, 30m
174 - Stub Matching Antennas
175 - J-Style Vertical Wire Antenna for 10m
176 - Dual Band Vertical with Zepp Feeders for 40m, 20m
177 - RCA Double Doublet for 40m to 12m
178 - RCA Spiderweb Antenna for 40m to 6m
179 - Folded Dipole with Shorted Straps
180 - Twin-Lead Marconi Antenna for 160m, 80m
181 - Broadband Antenna Quarter-Wave Balun for 80m
182 - Three-Quarter-Wave Folded Doublet for Dual-Band
183 - Three-Quarter-Wave Folded Doublet No-Switch for Dual-Band
184 - Wideband Omni-Directional Discone Antenna
185 - Wideband Rhombic Antenna for 40m to 10m
186 - Pre-Cut Linear Array Antenna 3dB-Gain for 40m
187 - X-Array Antenna 6dB-Gain for 20m, 15m, 10m
188 - Double-Bruce Array Antenna 5dB-Gain for 20m, 10m
189 - Bi-Square Broadside Array 4dB-Gain for 20m, 15m, 10m
190 - Six-Shooter Broadside Array 7.5dB-Gain for 20m, 15m, 10m
191 - Triplex Flat-Top Beam 4.5dB-Gain for 20m, 15m, 10m
192 - Dual-Band Tilt Antenna for 20m, 10m
193 - Super Space Multiband Dipole Antenna for 80m to 10m
194 - Bi-Square Beam Antenna Gain=5.5dB for 10m
195 - Cousin of G5RV Multiband Antenna for 40m to 10m
196 - Cayman Quad Antenna for 20m
197 - Hentenna Gain=3dB with Bazooka Match for 6m
198 - X-Beam Antenna Gain=3dB for 20m
199 - Twin Delta Loop Antenna Gain=6dB for 160m, 80m, 40m
200 - Inverted-V Beam Antenna for 30m

362 - Tri-Band Wire Beam VK2ABQ for 20m,15m,10m
363 - Glen Forest Marconi Antenna for 80m,30m,17m,12m
364 - Broadband Inverted-V Antenna for 80m to 10m
365 - Broadband Terminated Delta Loop
366 - Skywire Loop Antenna for 80m,40m
367 - Rectangular Loop Antenna for 80m
368 - Mini Delta Beam GM3VLB for 20m,17m,21m,13m,10m
369 - End-Fed Inverted-Vee Beam
370 - Conical Vee with Balun for 40m,15m
371 - Vertical Delta Loop Antenna for 160m,80m
372 - Two Wire Resonant Rhombic Antenna for 20m,15,10m
373 - Inverted-Vee with Parasitic Reflector for 40m
374 - Acute Angle Inverted-Vee Antenna for 160m to 10m
375 - Open-Wire End-Fire Beam for 15m,10m
376 - Single Mast Two-Element Delta Loop for 40m
377 - Dual Band Turnstile Triangle Antenna for 80m,40m
378 - Three-Band Short Antenna for 160m,80m,40m
379 - Sloping-Vee Antenna for 80m to 6m
380 - Five DX Antennas for 30m
381 - T-Ant for 160m, 80m
382 - L-Ant for 160m, 80m
383 - Monoband Delta Loop for 40m
384 - Single-Band Wire Beam Antenna for 40m,20m,15m,10m
385 - Rhombic Beam Antenna for 80m, 40m
386 - Inverted-V Antenna for 80m, 40m, 30m
387 - Directive Delta Loop Antenna for 160m
388 - Simple Sloper DXA Antenna for 160m to 40m
389 - 2x Element Delta Loop for 12m
391 - Vertical Rhombic Antenna
392 - Loaded Dipole Antenna for 160m
393 - Monoband Fat-Dipole Antenna for 160m to 10m
394 - Off-Center Fed Dipole 160m to 10m
395 - Horizontal Quad Antenna
396 - W3DZZ 5-band Antenna for 80m,40m,20m,15m,10m
397 - W3DZZ 4-band for 160m,80m,40m,20m
398 - Broadband Butterfly Dipole Antenna for 160m to 6m
399 - Broadband Butterfly House Roof Antenna for 160m to 6m
400 - Broadband Square Loop Antenna for 80m to 10m
401 - Broadband Terminated Dipole Antenna for 80m to 10m
402 - Inverted-V Delta Wing Antenna for 160m to 6m
403 - Broadband Butterfly Dipole Antenna for 160m to 10m

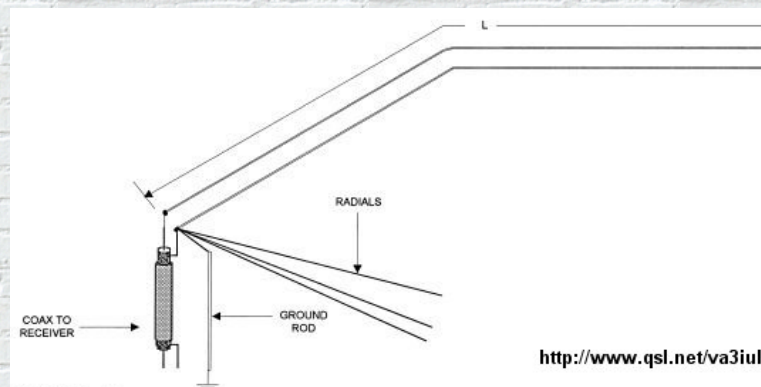
01 - Tee Antenna



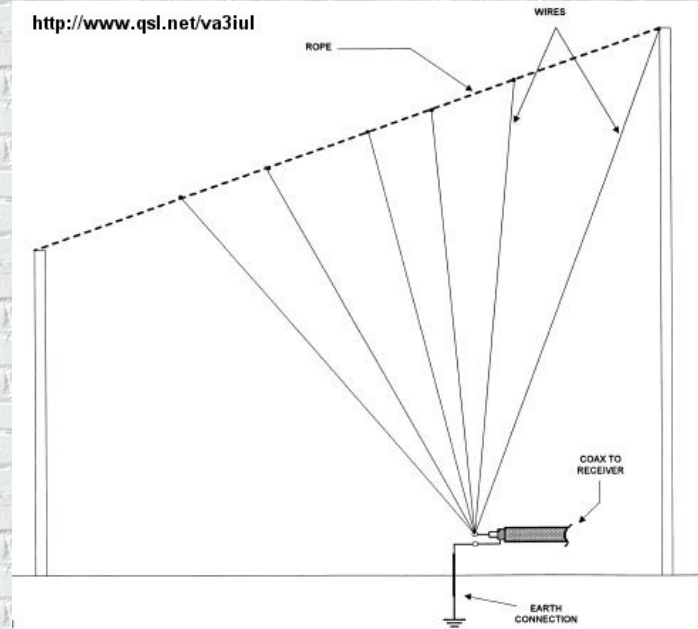
02 - Half-Lambda Tee Antenna



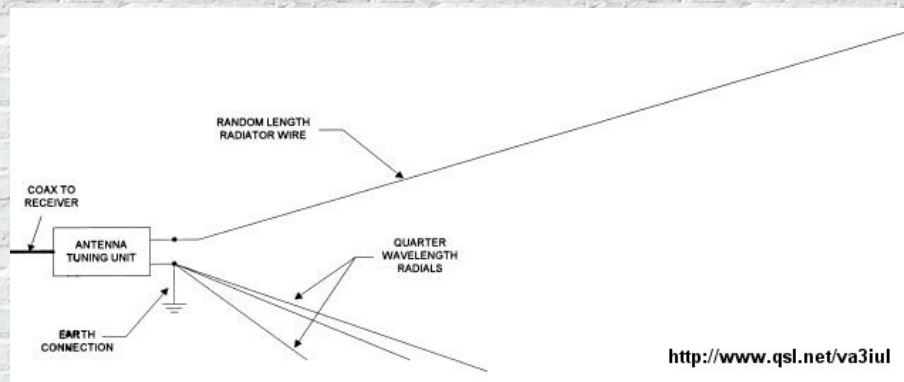
03 - Twin-Led Marconi Antenna



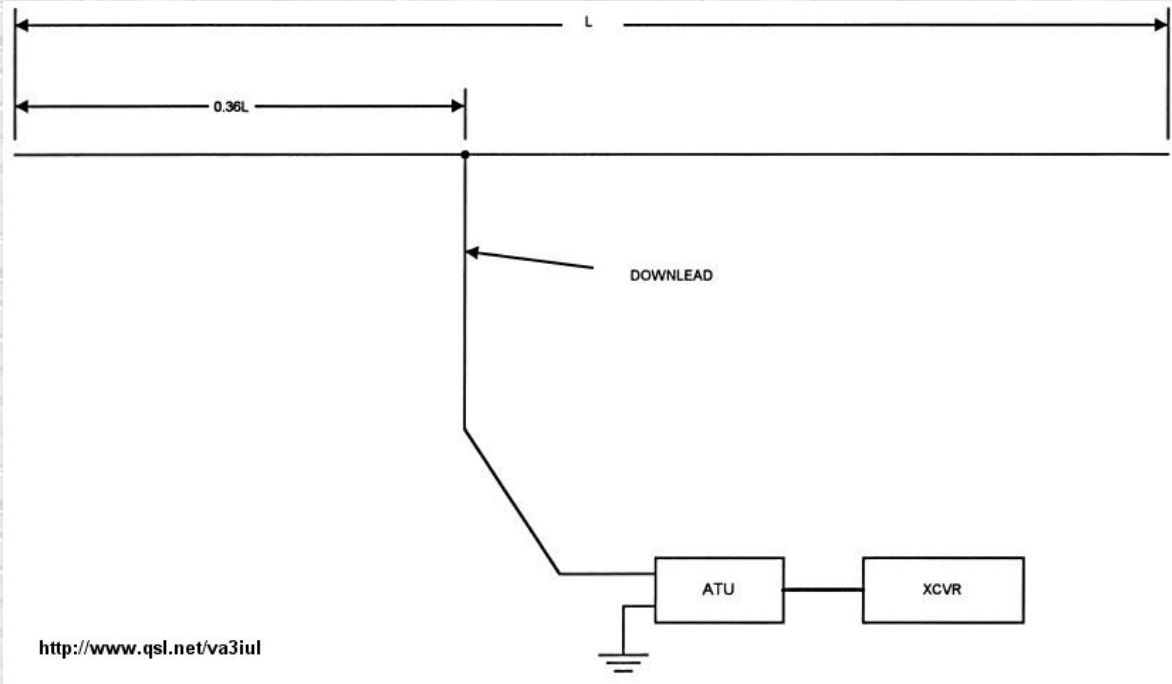
04 - Swallow-Tail Antenna



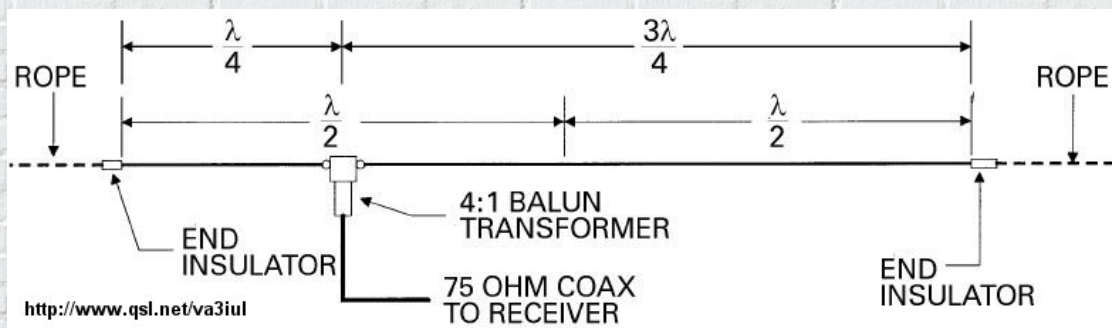
05 - Random Length Radiator Wire Antenna



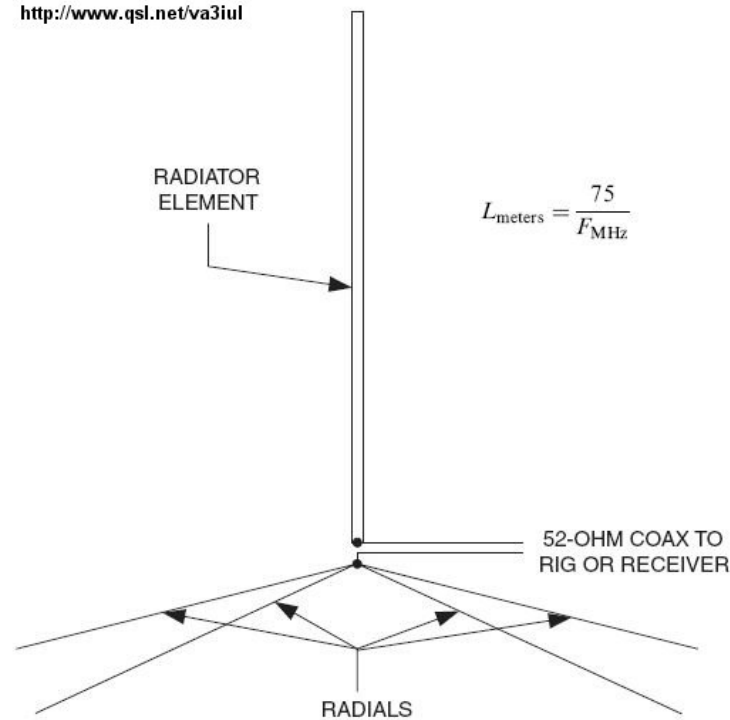
06 - Windom Antenna



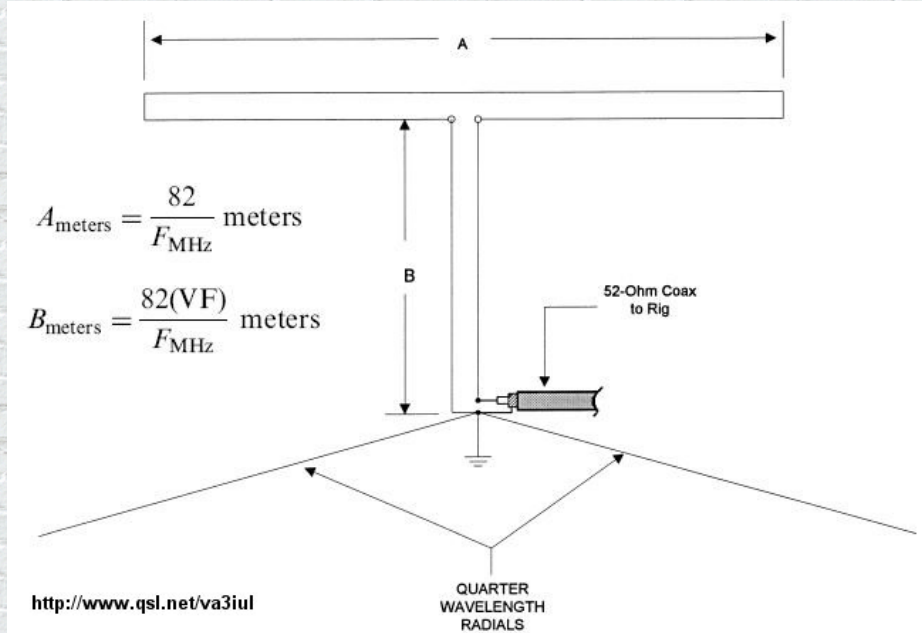
07 - Windom Antenna - Feed with coax cable



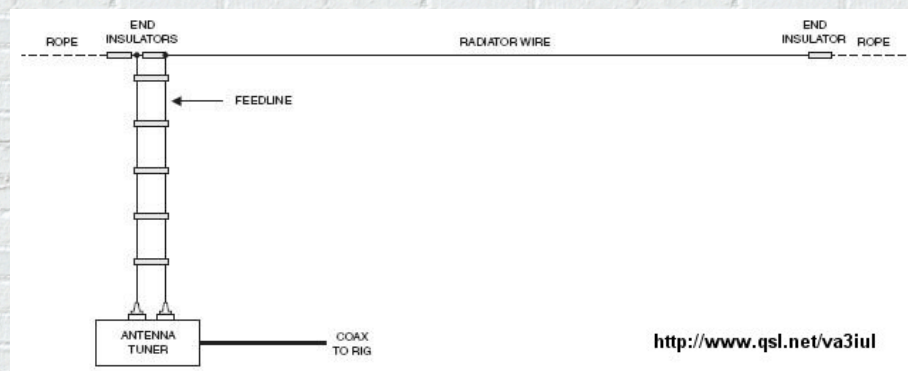
08 - Quarter Wavelength Vertical Antenna



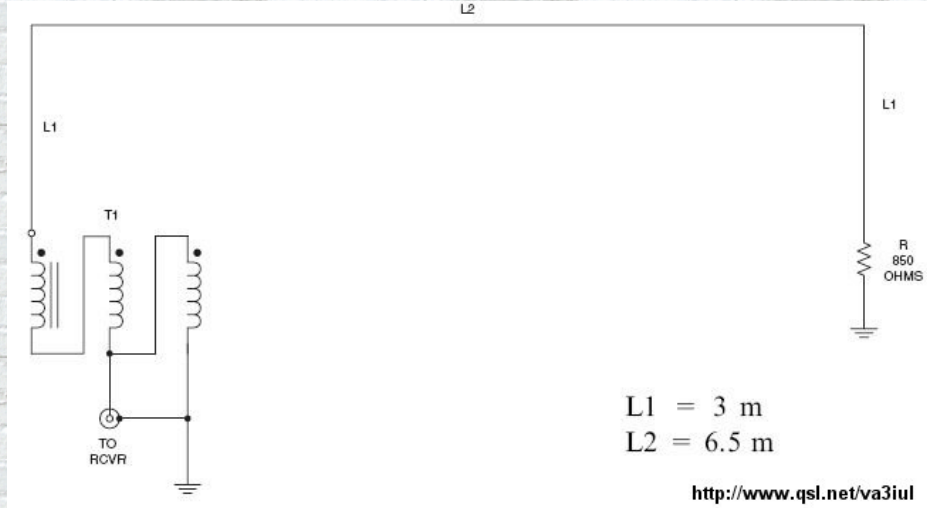
09 - Folded Marconi Tee Antenna



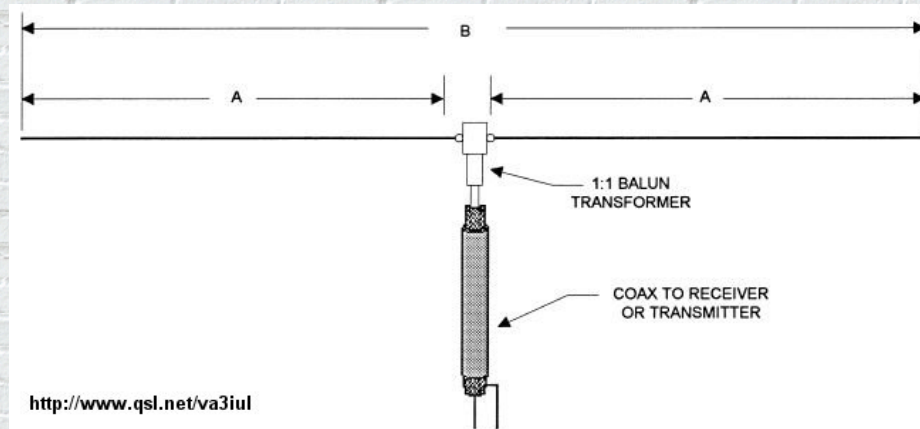
10 - Zeppelin Antenna



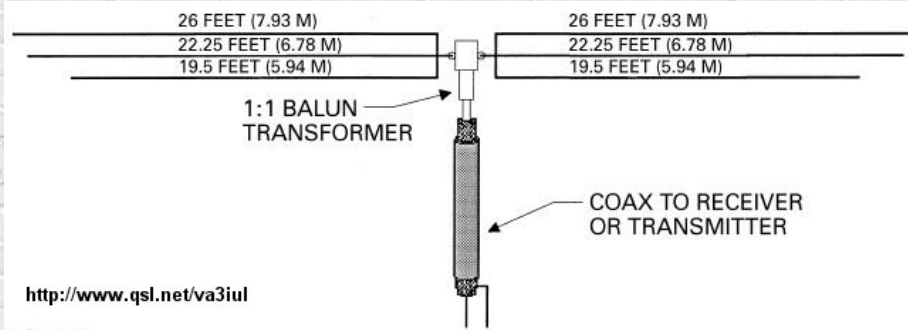
11 - EWE Antenna



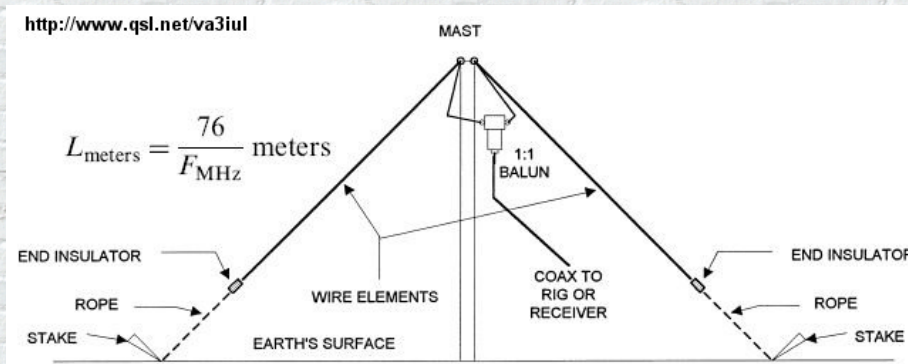
12 - Dipole Antenna - Balun



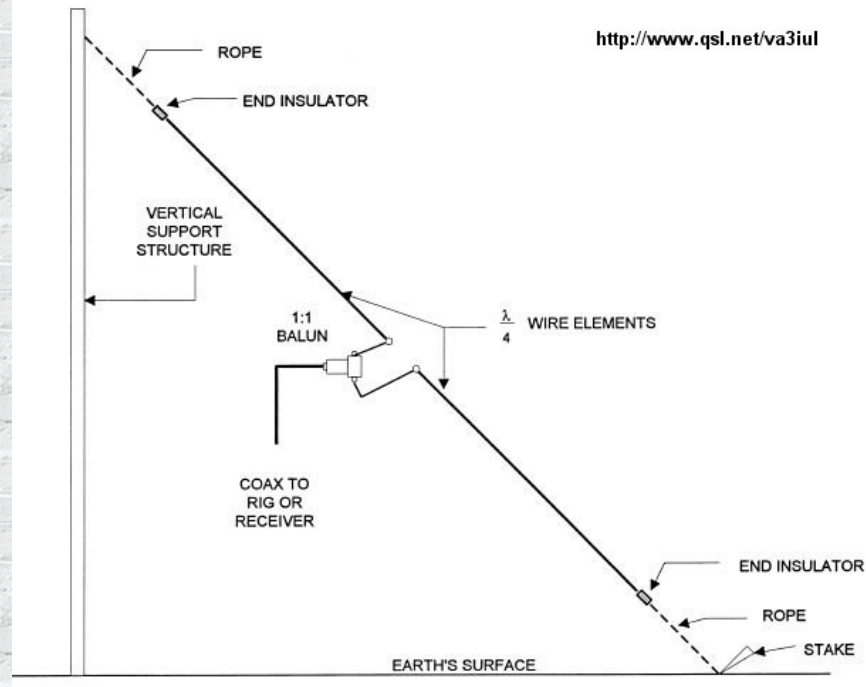
13 - Multiband Dipole Antenna



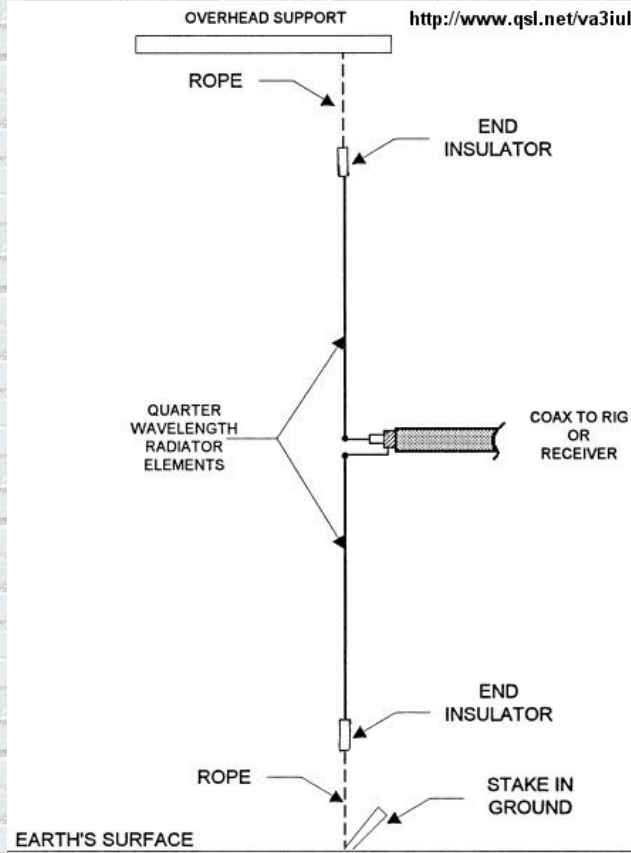
14 - Inverted-Vee Antenna



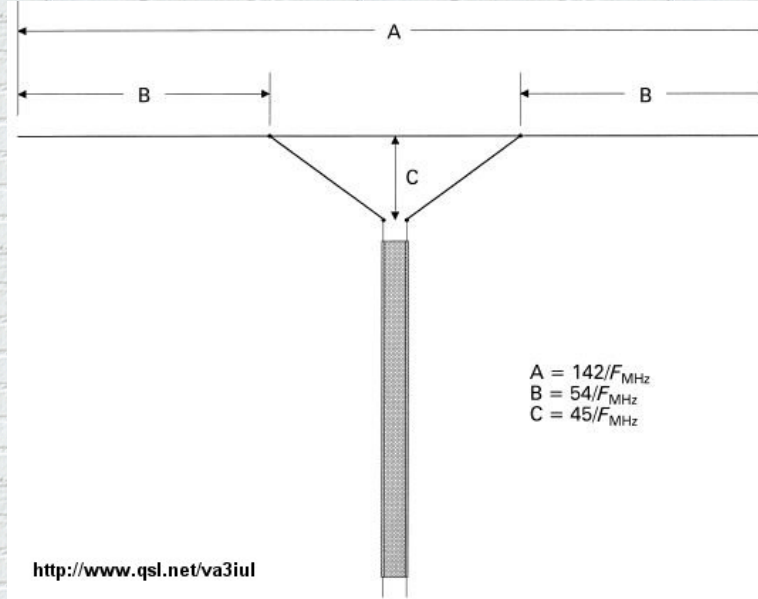
15 - Sloping Dipole Antenna



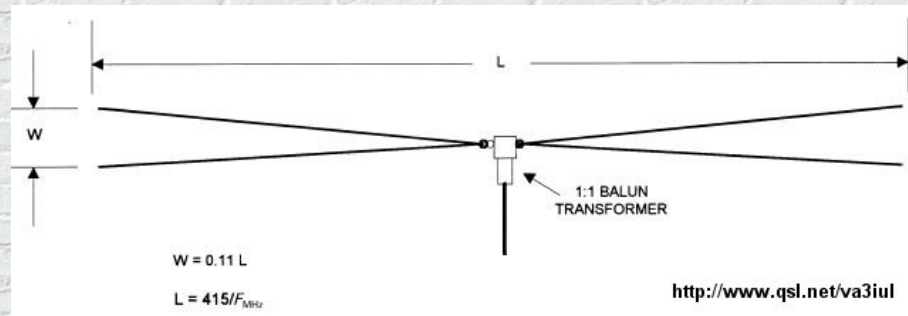
16 - Vertical Dipole



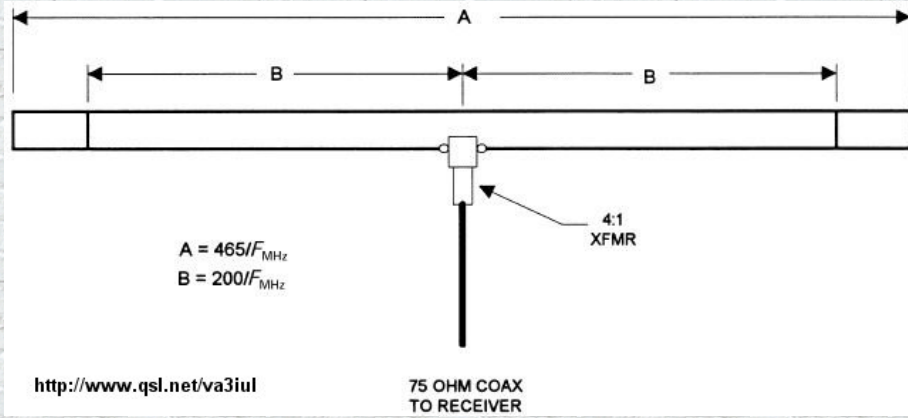
17 - Delta Fed Dipole Antenna



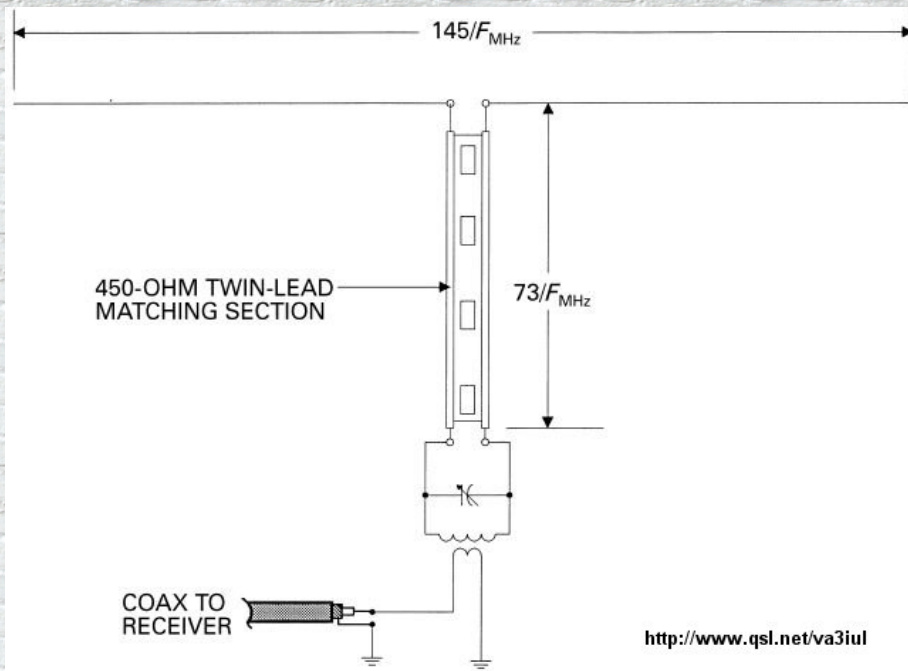
18 - Bow-Tie Dipole Antenna



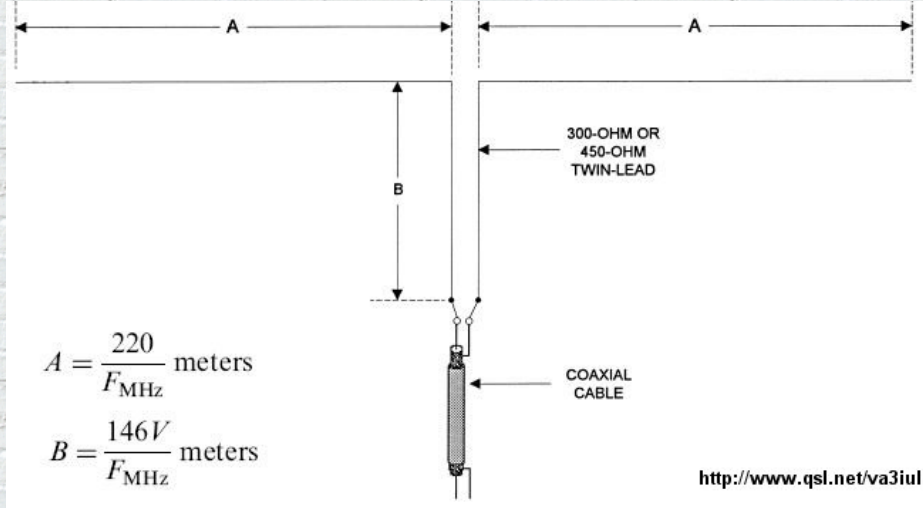
19 - Bow-Tie Folded Dipole Antenna for RX



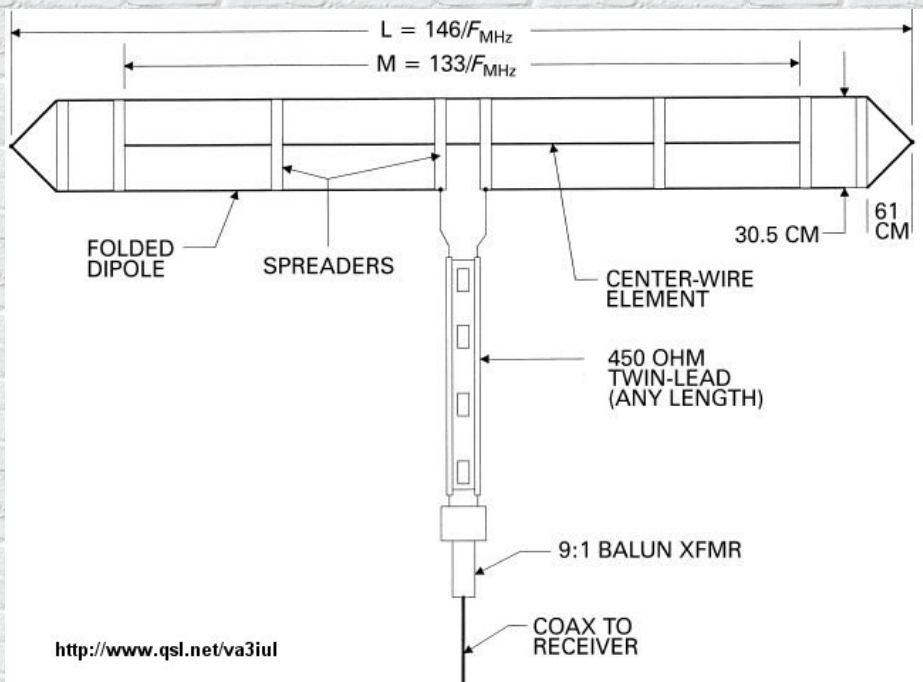
20 - Multiband Tuned Doublet Antenna



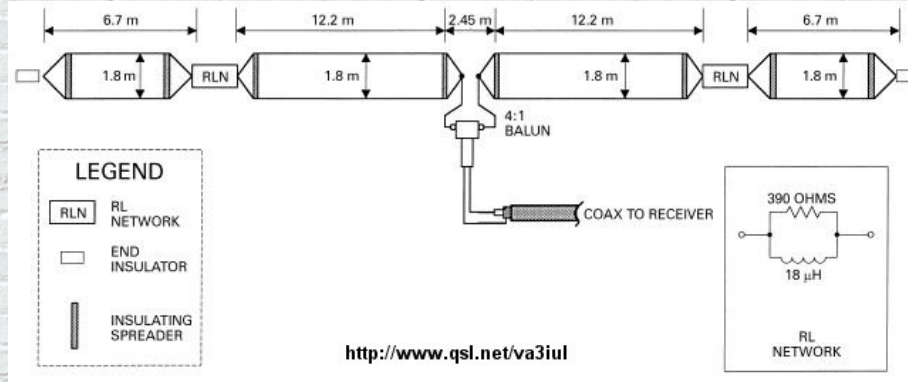
21 - G5RV Antenna



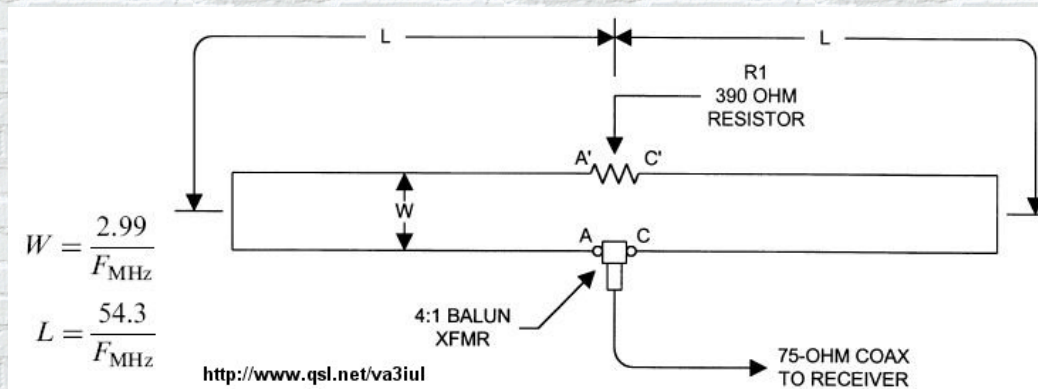
22 - Wideband Dipole Antenna



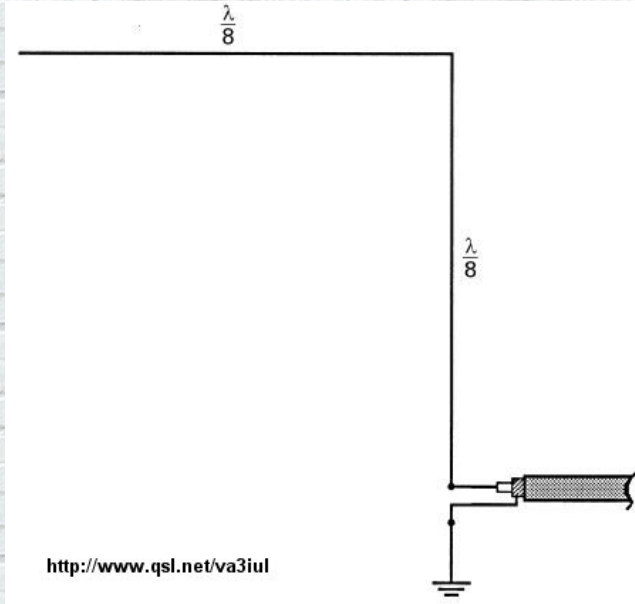
23 - Wideband Dipole for Receiving



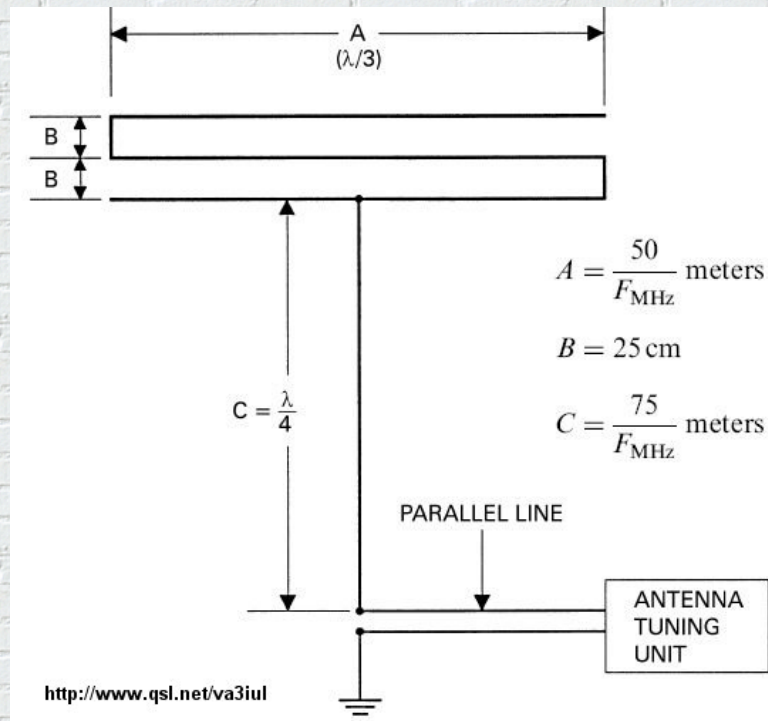
24 - Tilted Folded Dipole Antenna



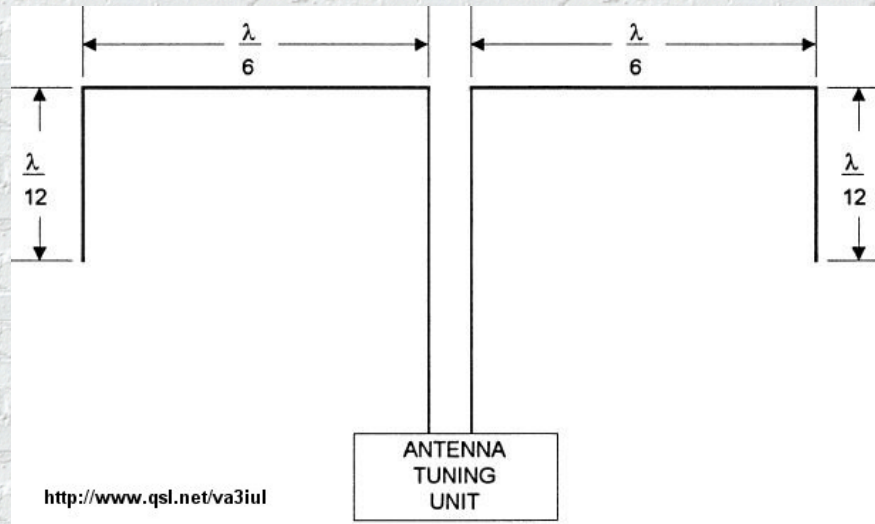
25 - Right Angle Marconi Antenna



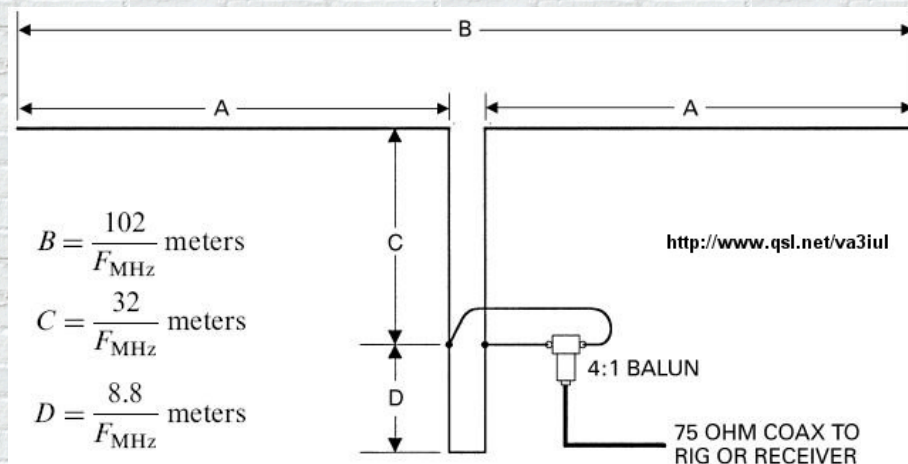
26 - Linearly Loaded Tee Antenna



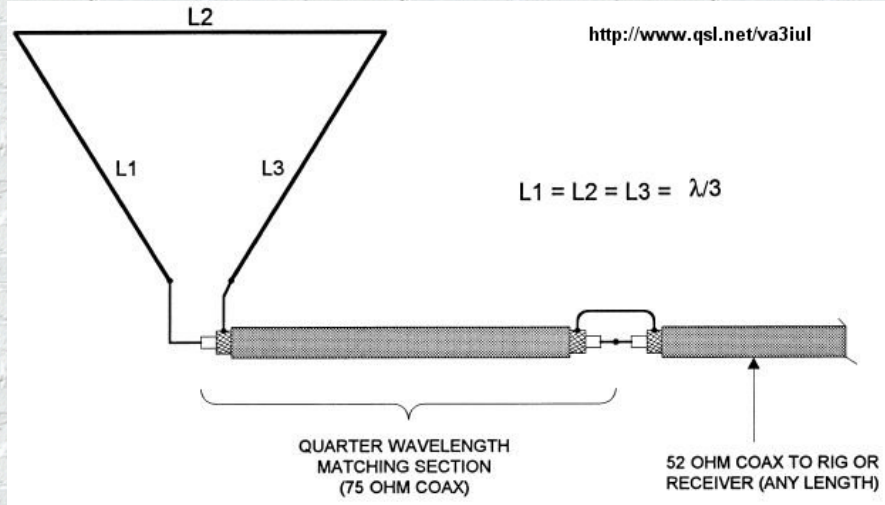
27 - Reduced Size Dipole Antenna



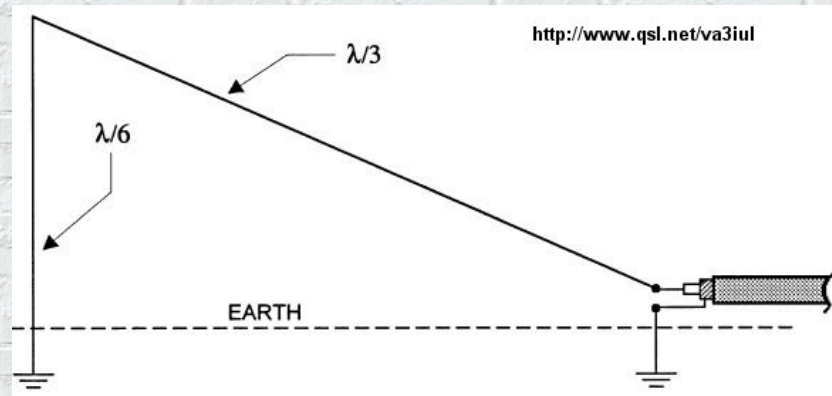
28 - Doublet Dipole Antenna



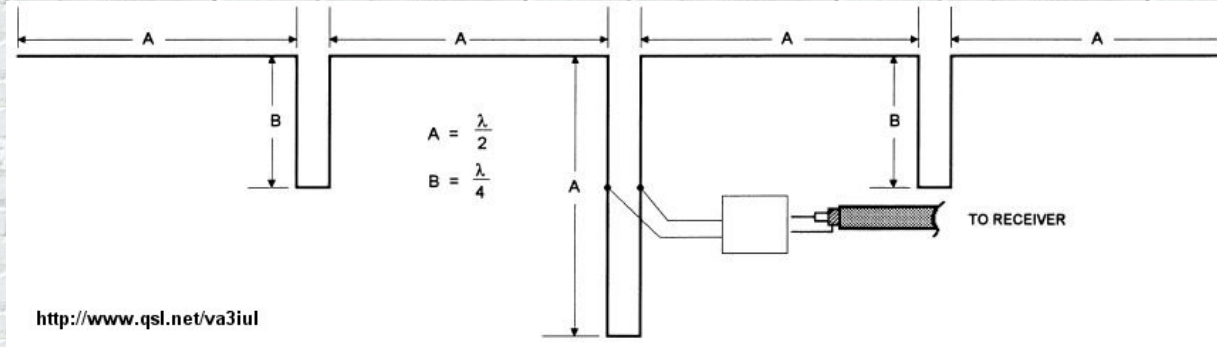
29 - Delta Loop Antenna



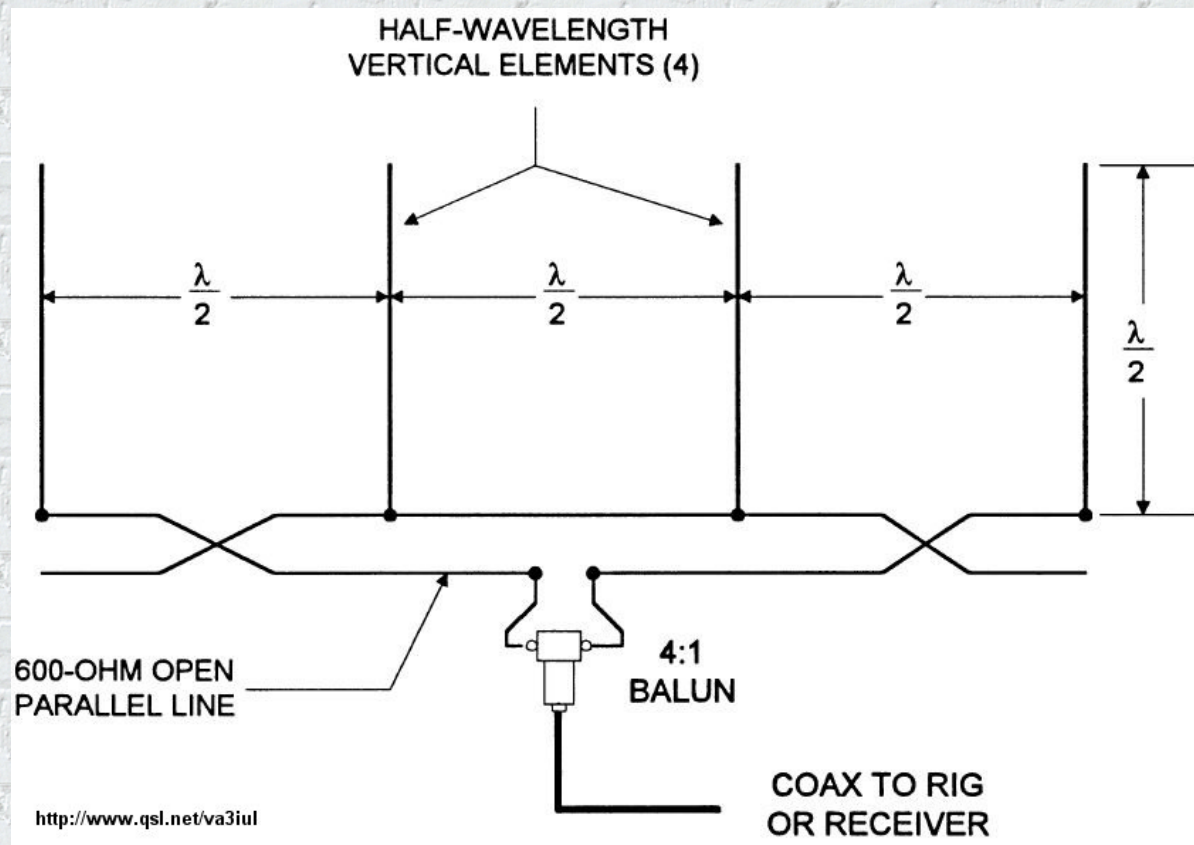
30 - Half Delta Loop Antenna



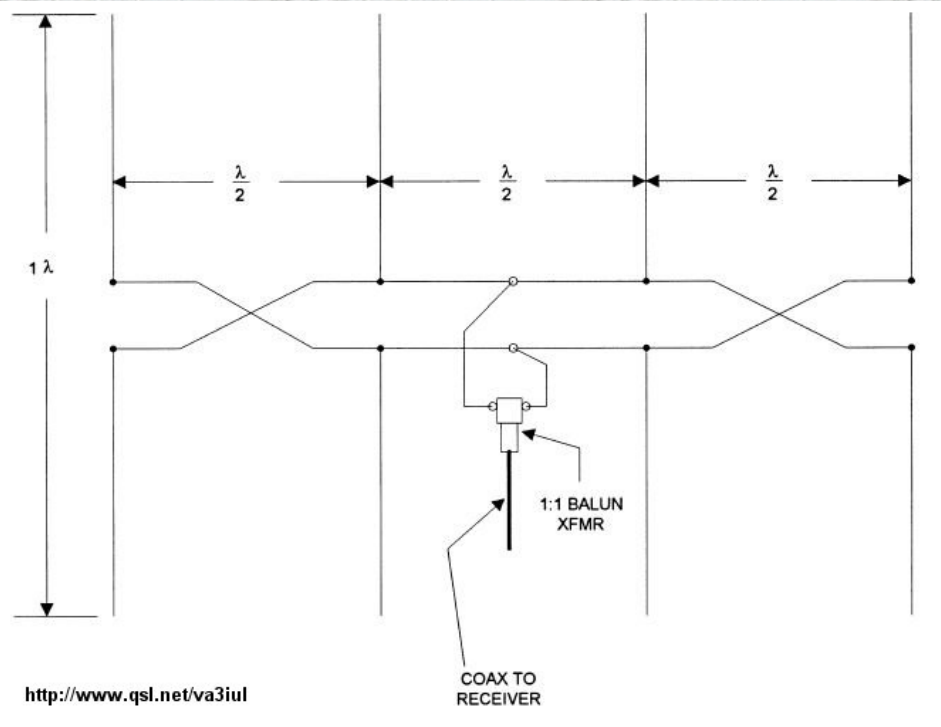
31 - Collinear Franklin Antenna



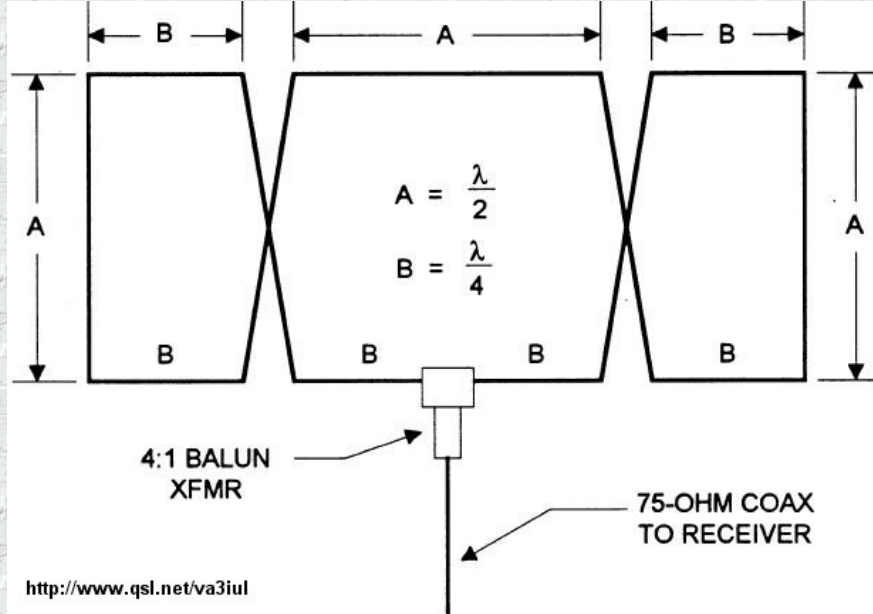
32 - Four Element Broadside Antenna



33 - The Lazy-H Array Antenna

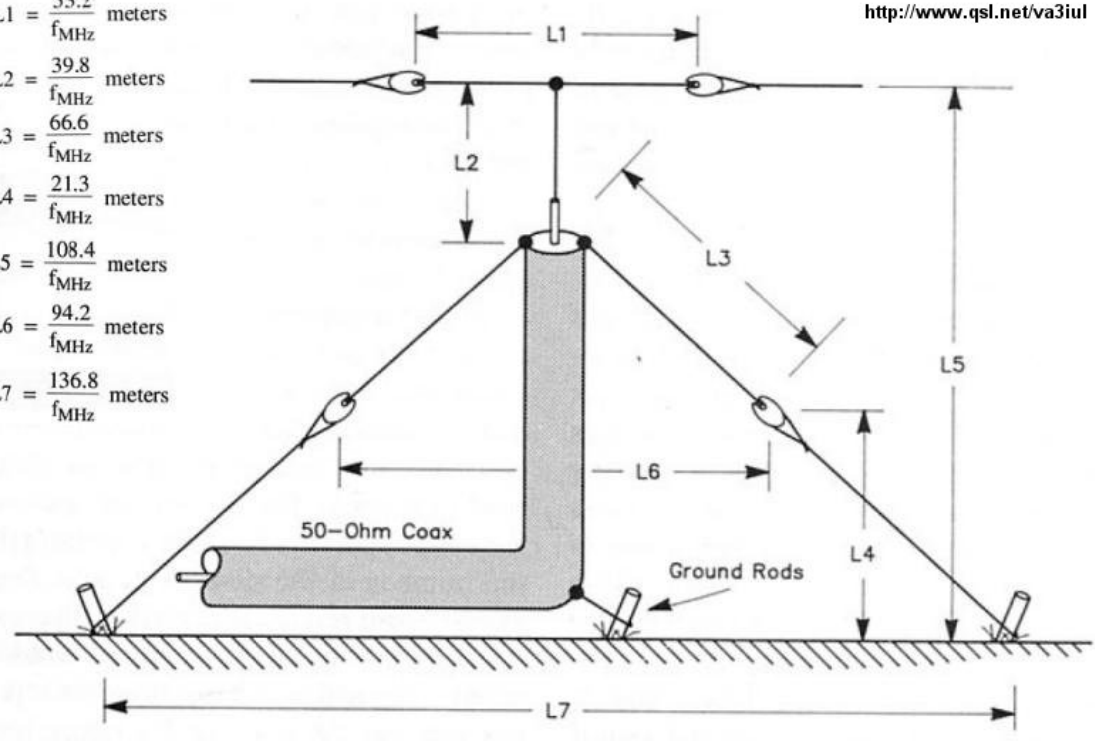


34 - Sterba Curtain Array Antenna

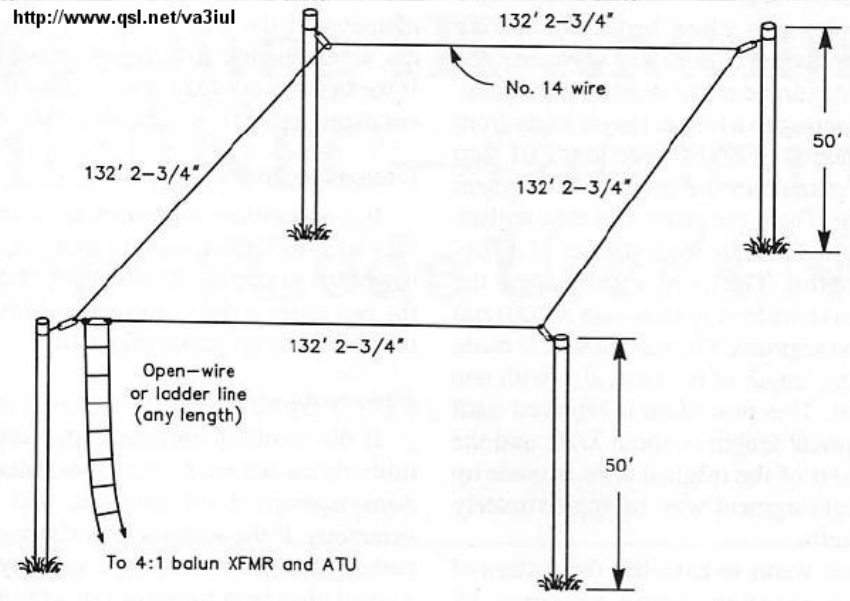


35 - T-L DX Antenna

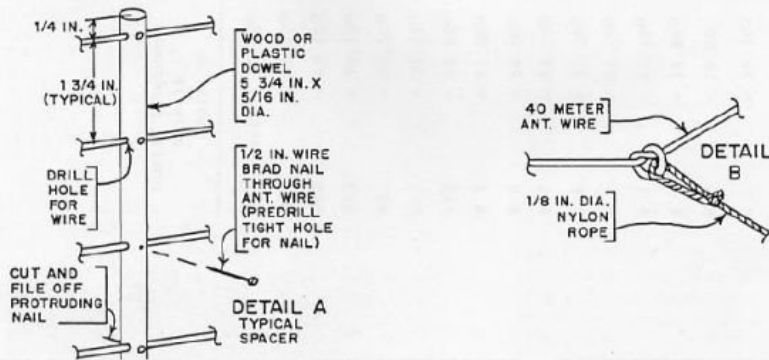
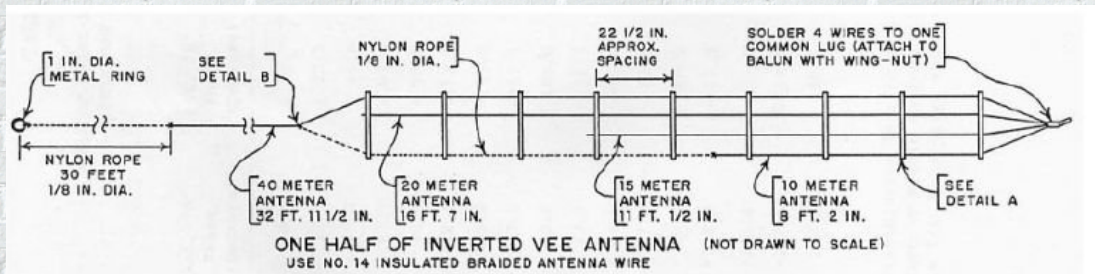
- $L1 = \frac{53.2}{f_{\text{MHz}}}$ meters
- $L2 = \frac{39.8}{f_{\text{MHz}}}$ meters
- $L3 = \frac{66.6}{f_{\text{MHz}}}$ meters
- $L4 = \frac{21.3}{f_{\text{MHz}}}$ meters
- $L5 = \frac{108.4}{f_{\text{MHz}}}$ meters
- $L6 = \frac{94.2}{f_{\text{MHz}}}$ meters
- $L7 = \frac{136.8}{f_{\text{MHz}}}$ meters

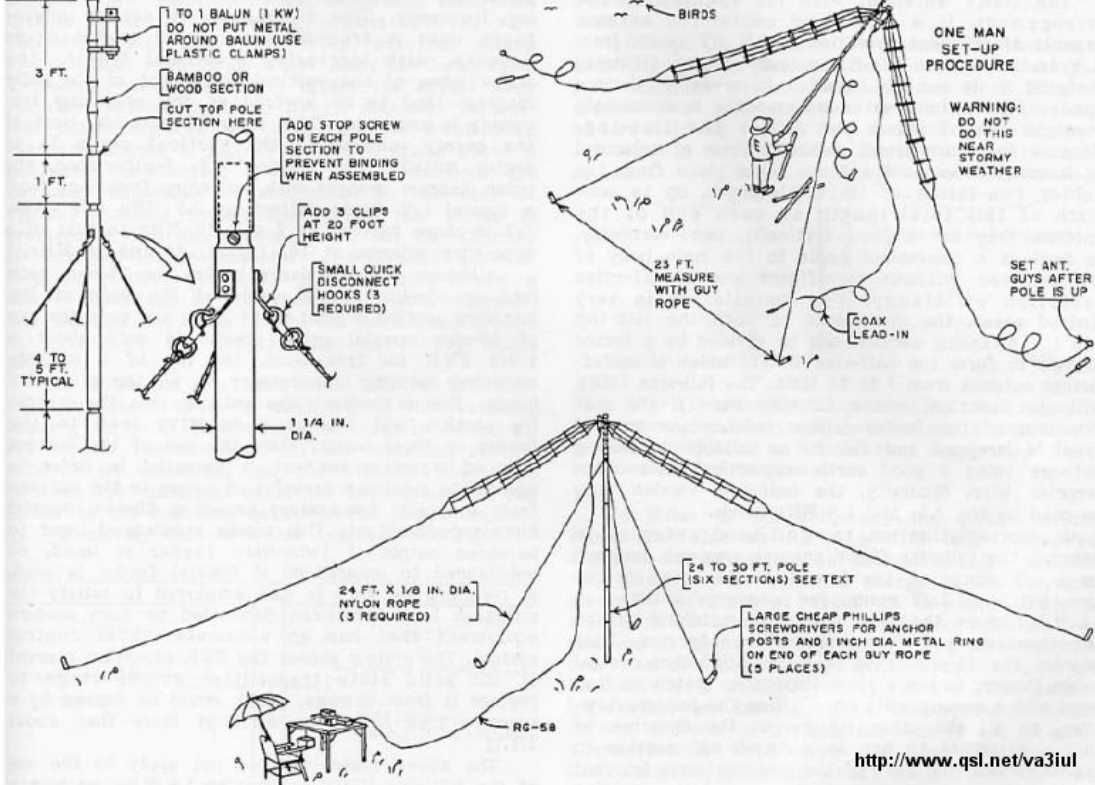


36 - 1.9 MHz Full-wave Loop Antenna

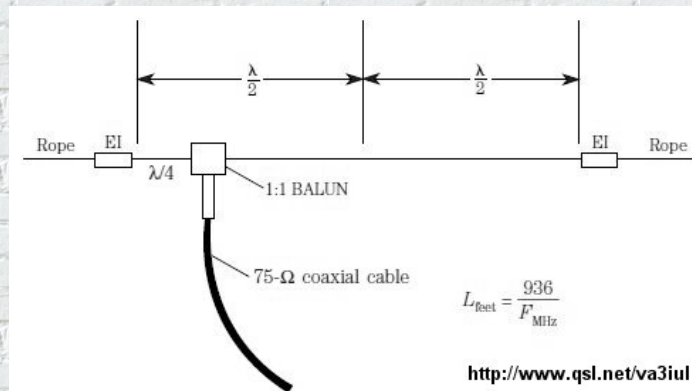


37 - Multi-Band Portable Antenna

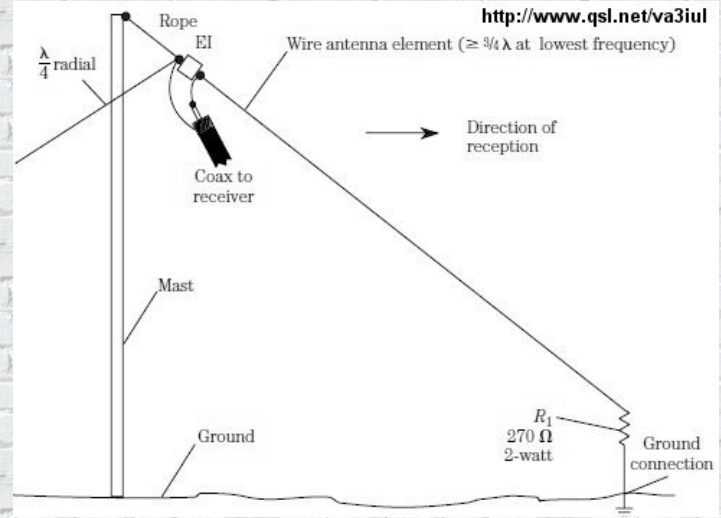




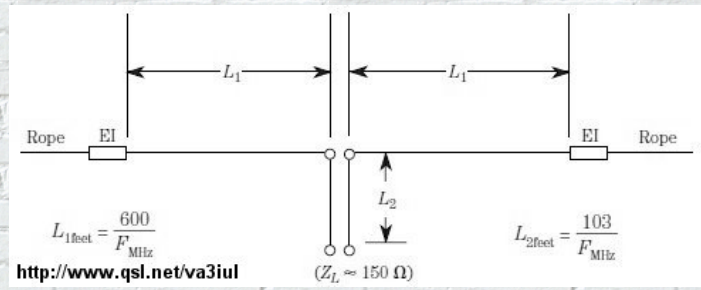
38 - Off-center-fed Full-wave Doublet Antenna



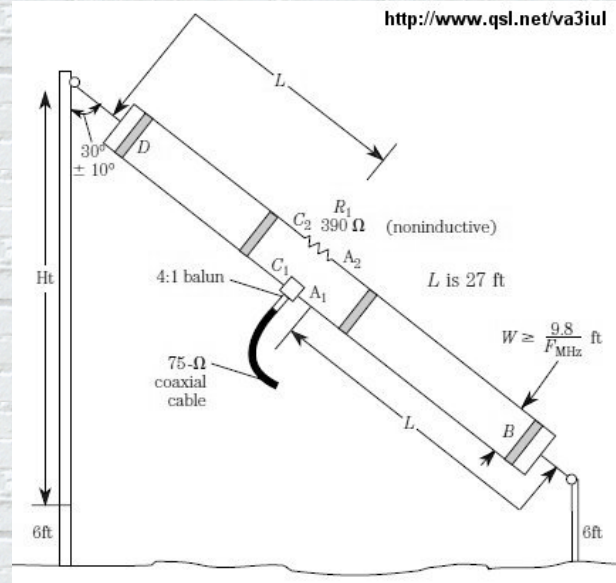
39 - Terminated Sloper Antenna



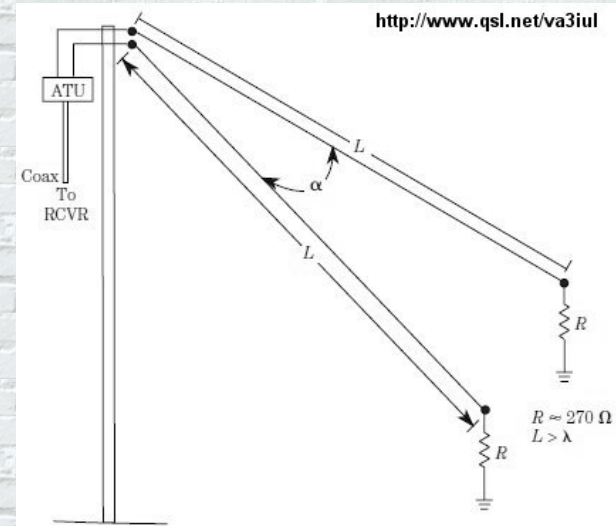
40 - Double Extended Zepp Antenna



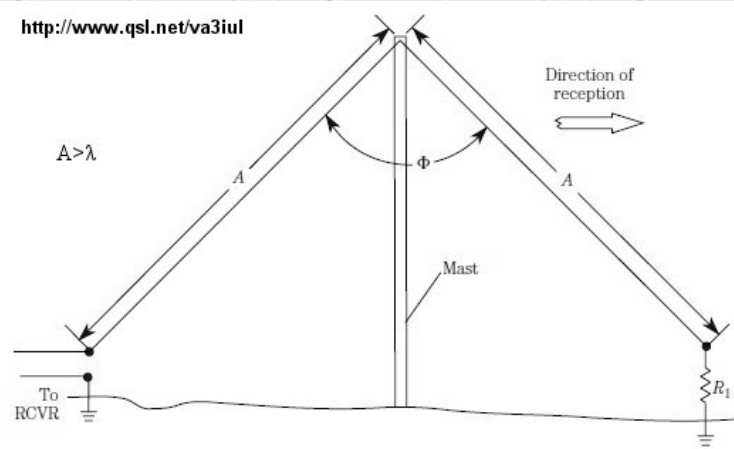
41 - TCFTFD Dipole Antenna



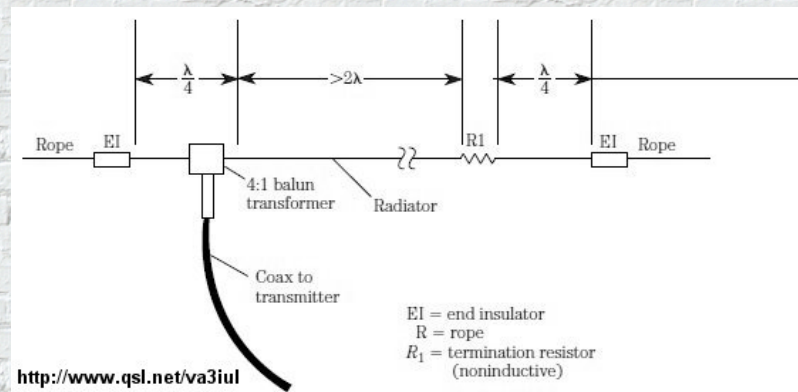
42 - Vee-Sloper Antenna



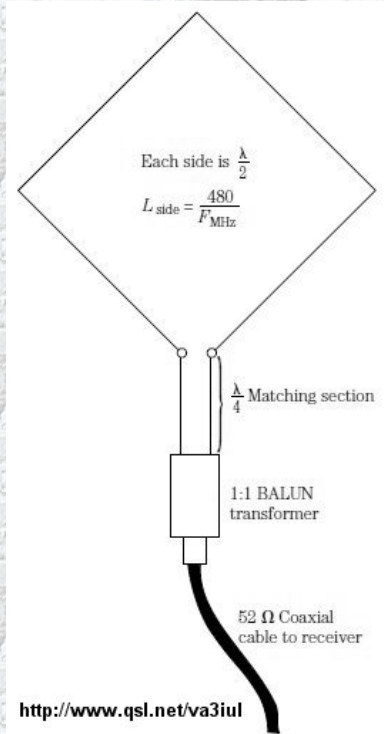
43 - Rhombic Inverted-Vee Antenna



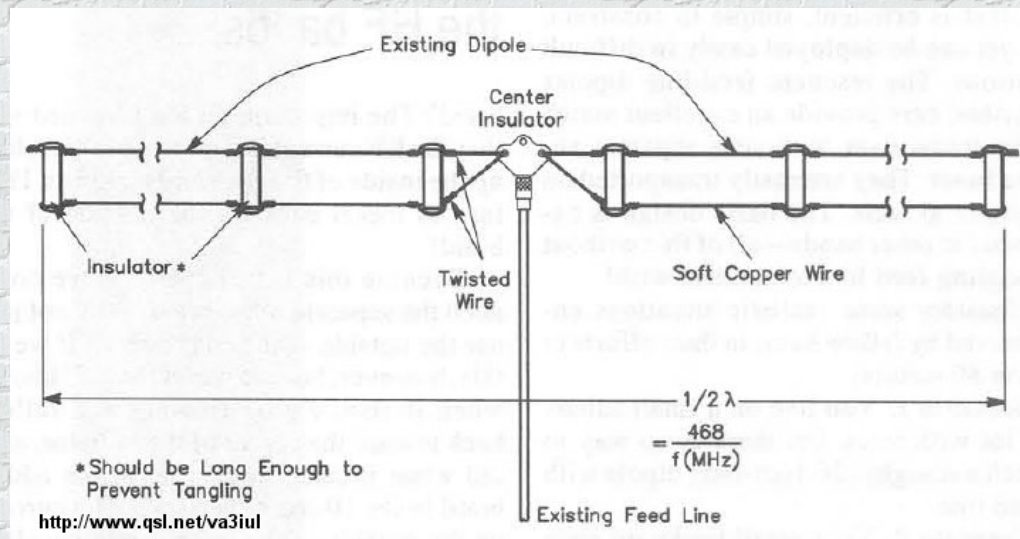
44 - Counterpoise Longwire



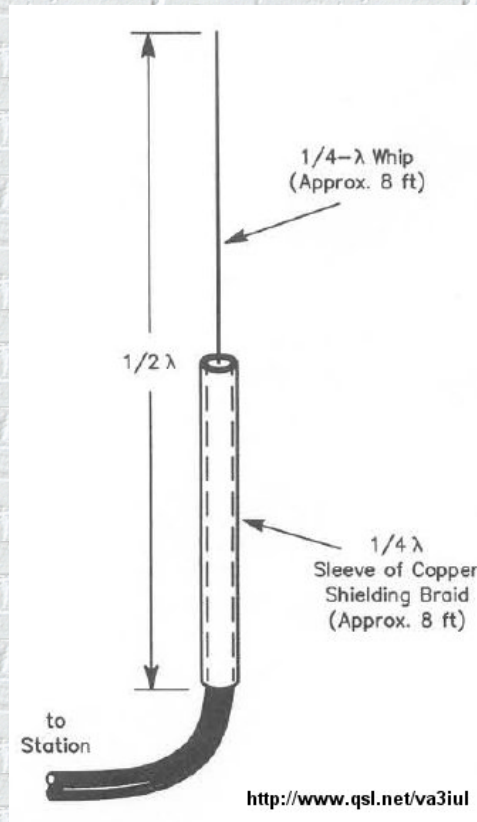
45 - Bisquare Loop Antenna



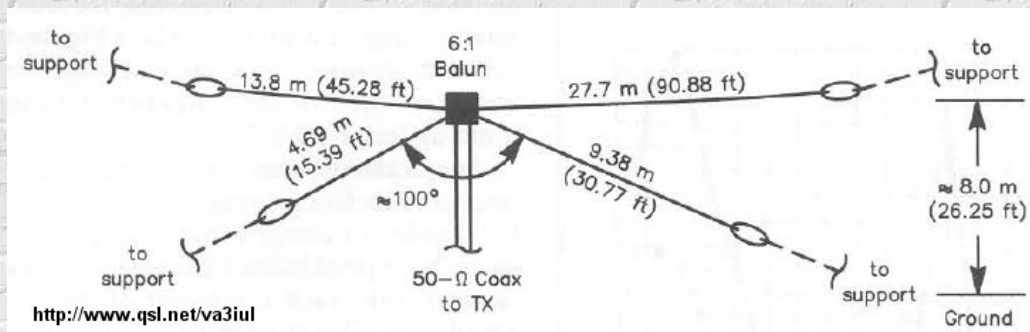
46 - Piggyback Antenna for 10m



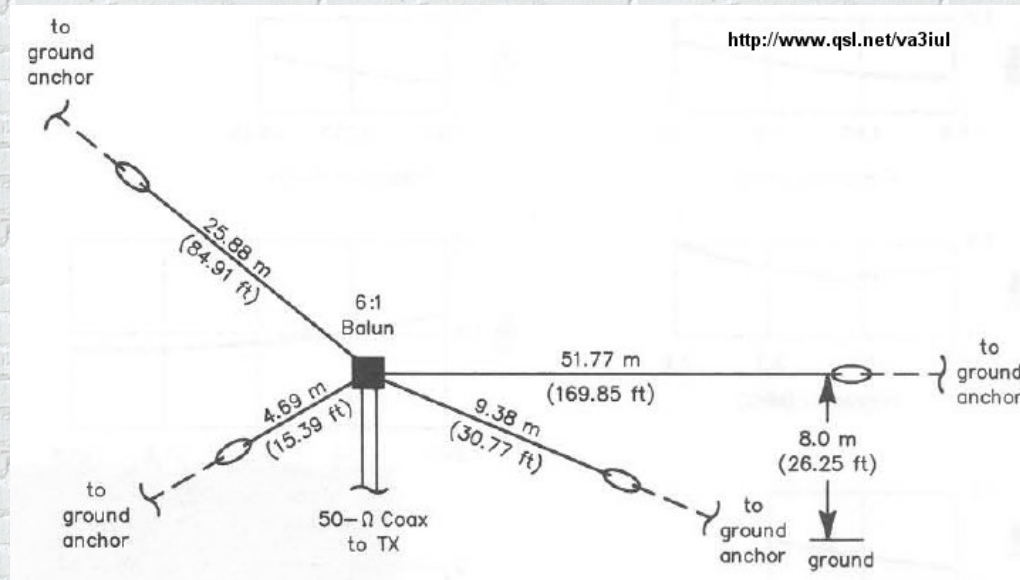
47 - Vertical Sleeve Antenna for 10m



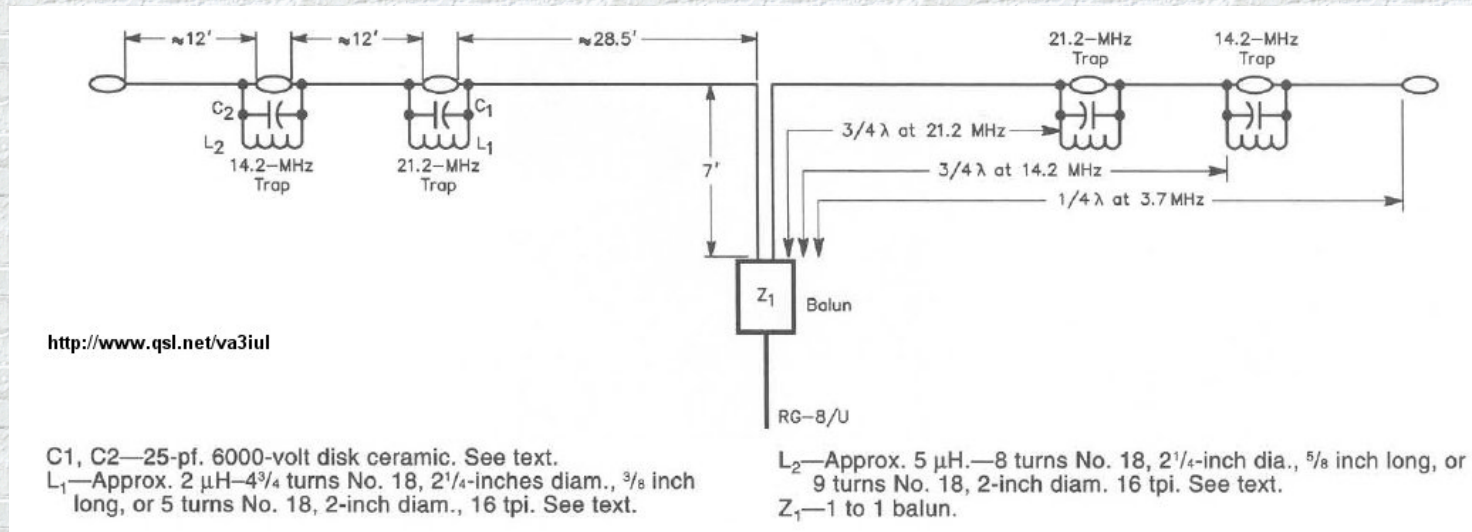
48 - Double Window Antenna



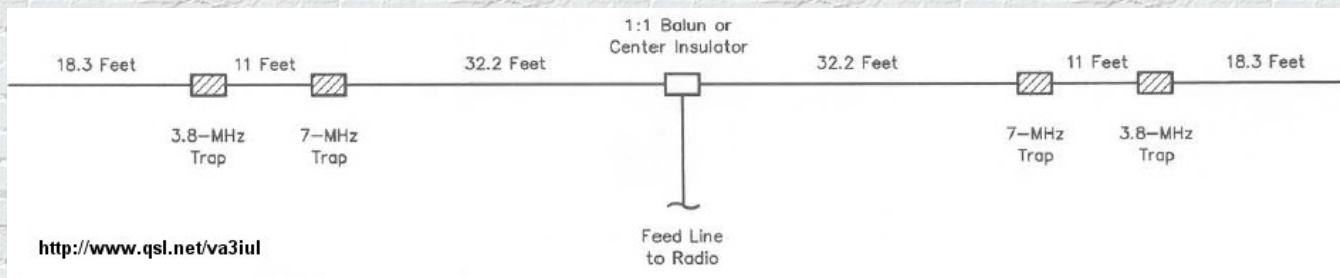
49 - Double Window for 9 Bands



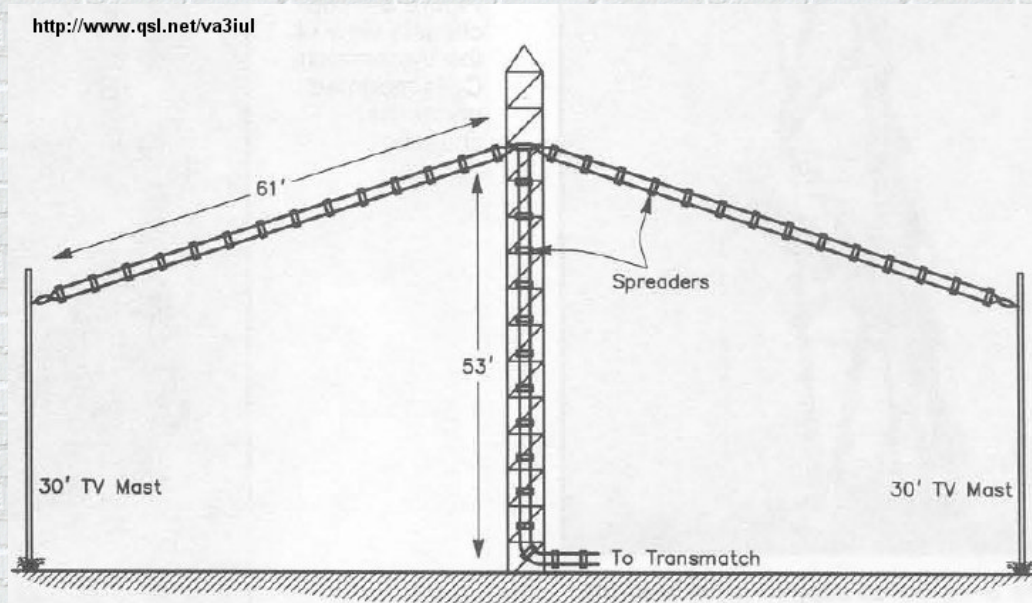
50 - Collinear Trap Antenna



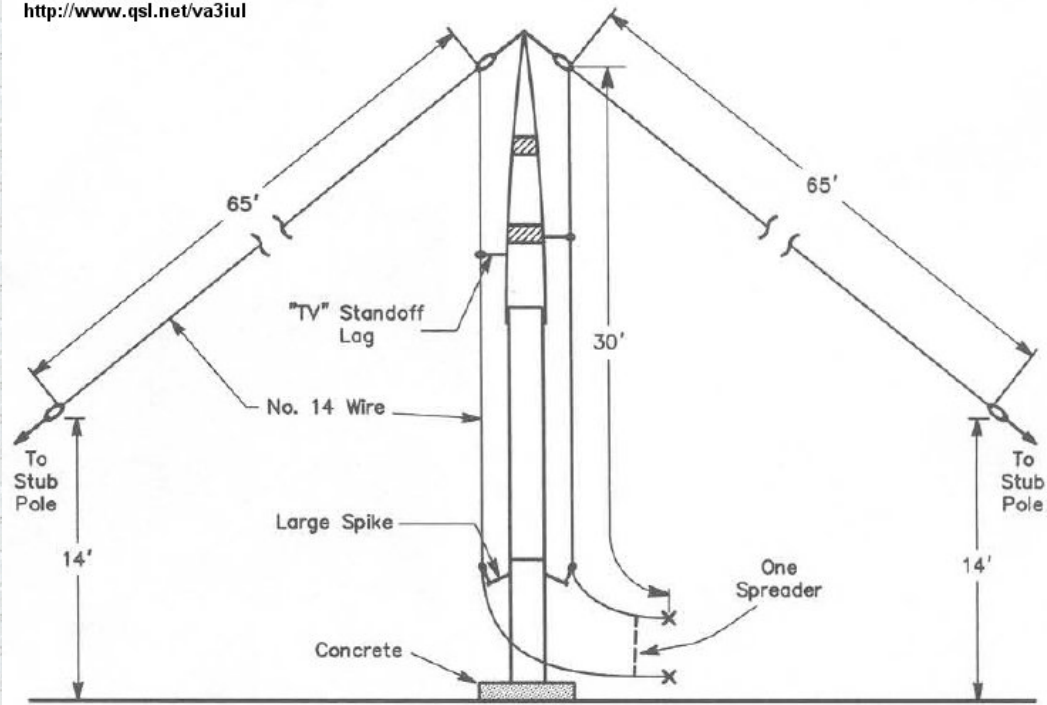
51 - Short Dipole Antenna for 40m - 80m - 160m



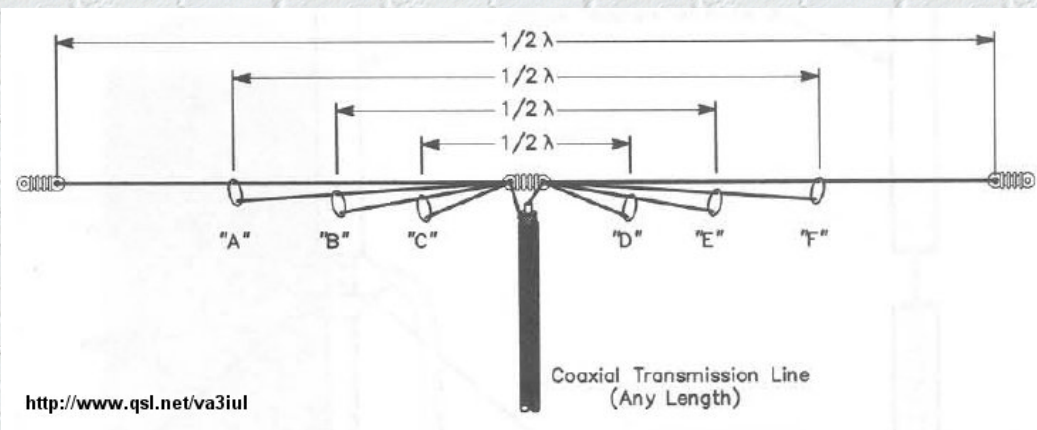
52 - Center Fed-Zepp Antenna for 80m - 40m



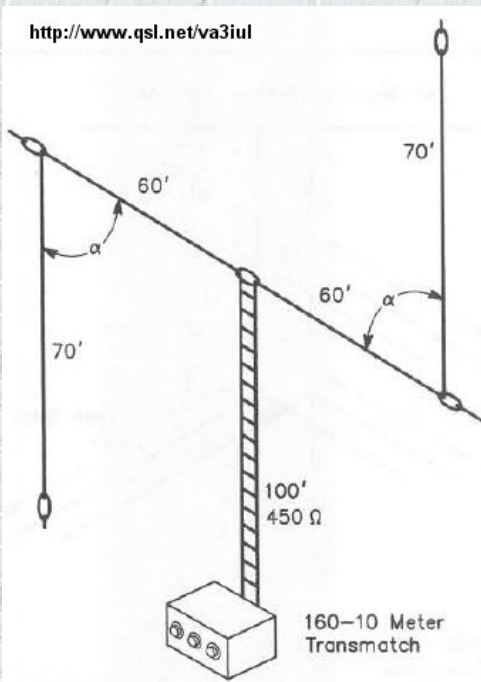
53 - All-Bands Antenna



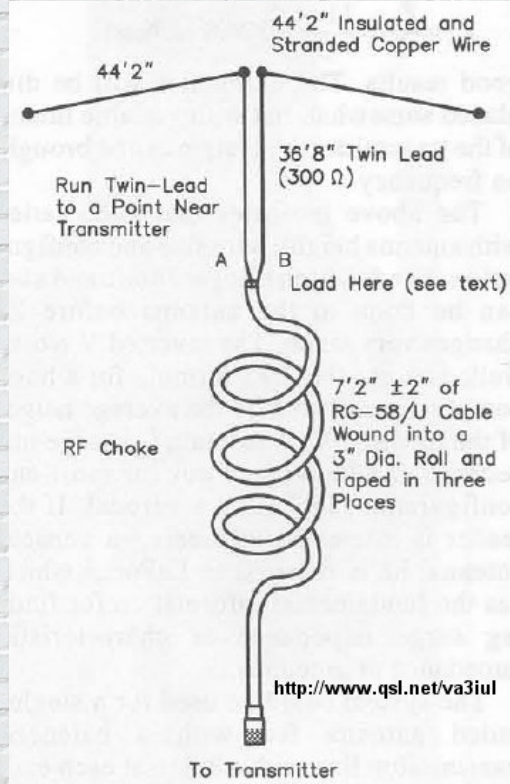
54 - All-Bands Dipole Antenna



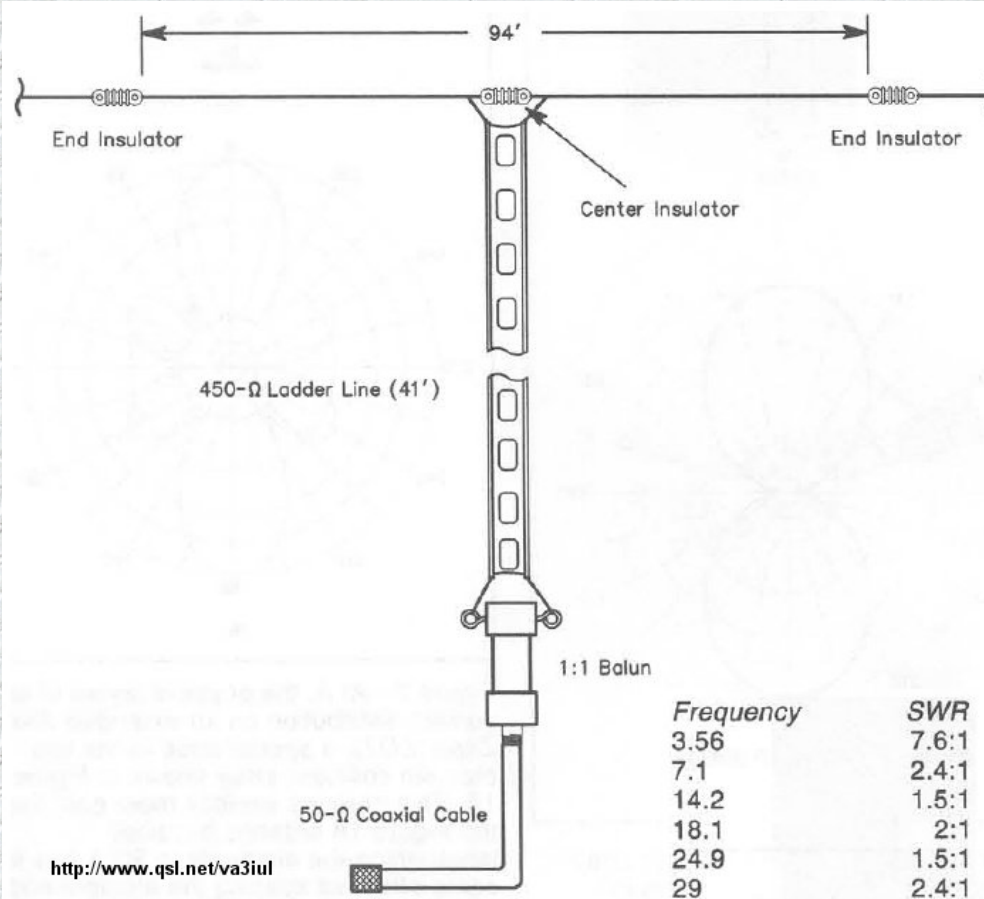
55 - Multiband Z Antenna



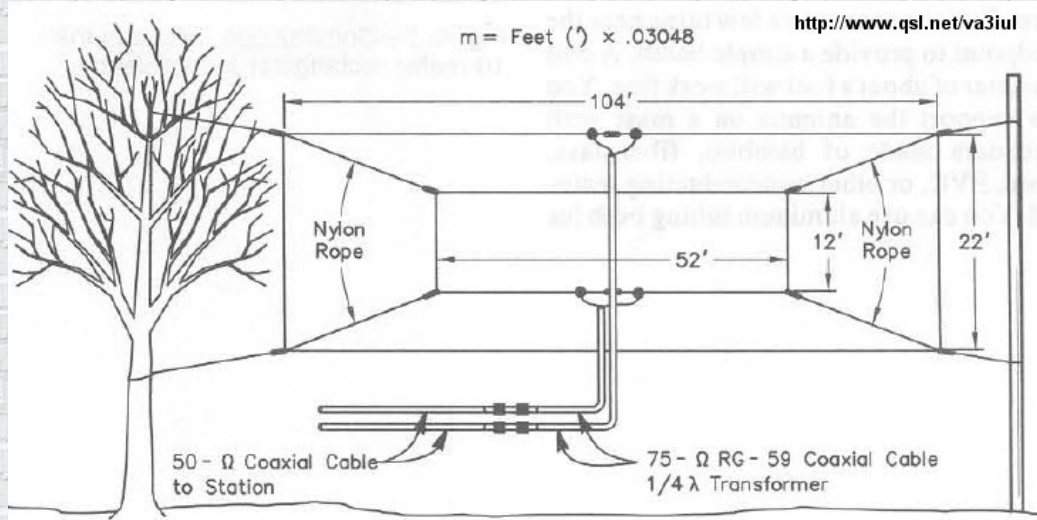
56 - Multiband Dipole Antenna



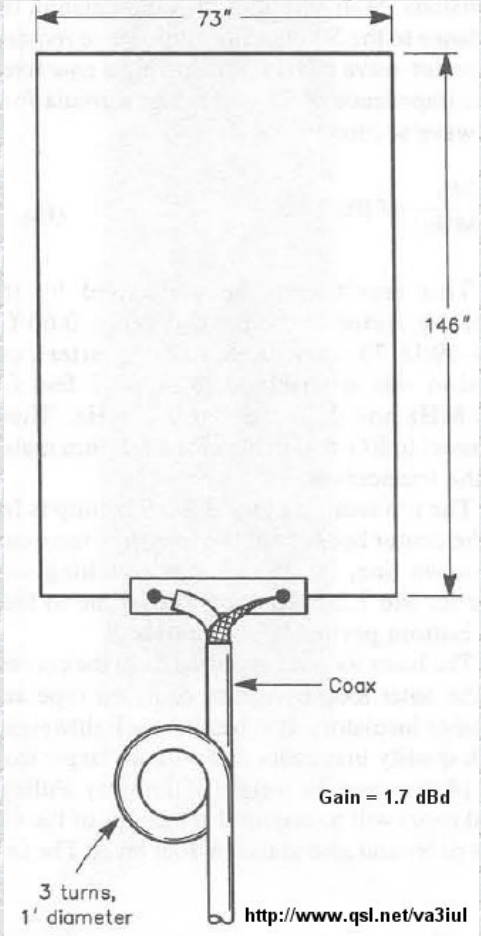
57 - Five-Bands No-Tuner Antenna



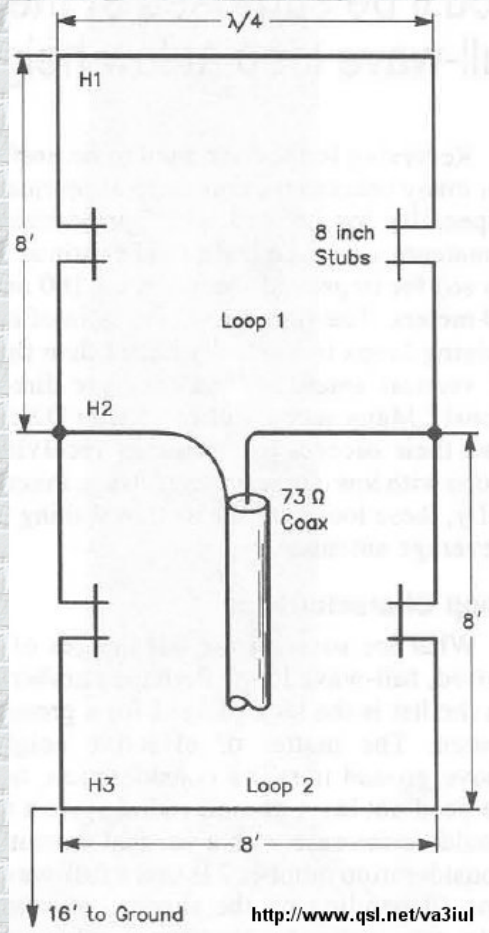
58 - Dualband Full-wave Loop Antenna for 80m-40m



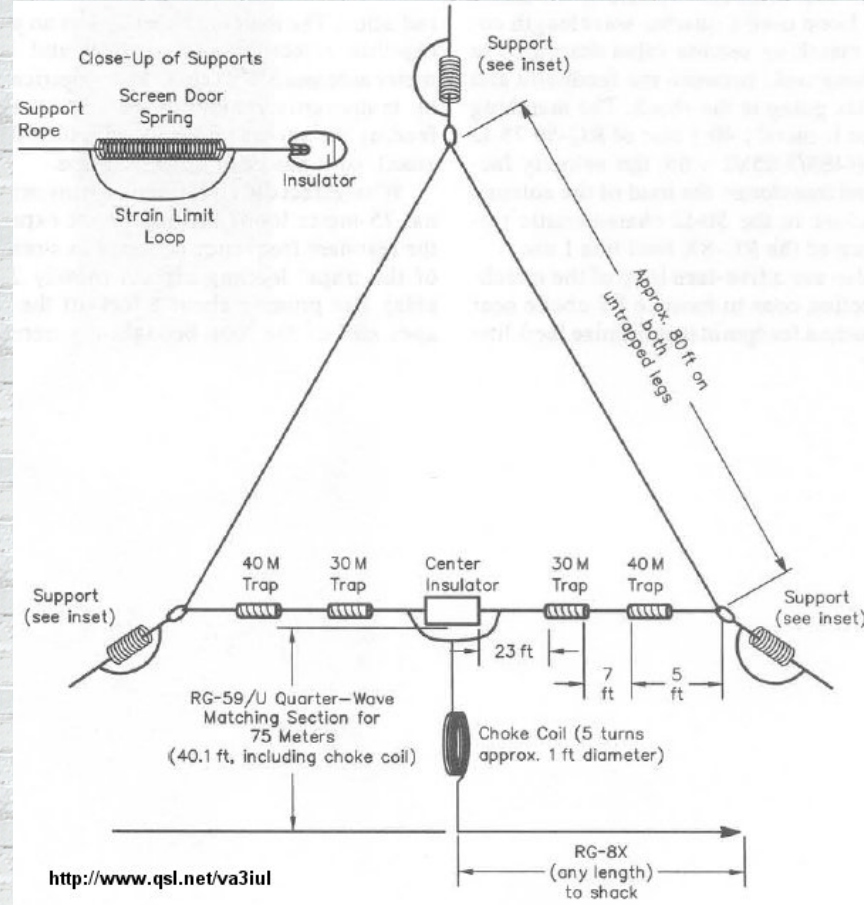
59 - Loop Antenna for 10m



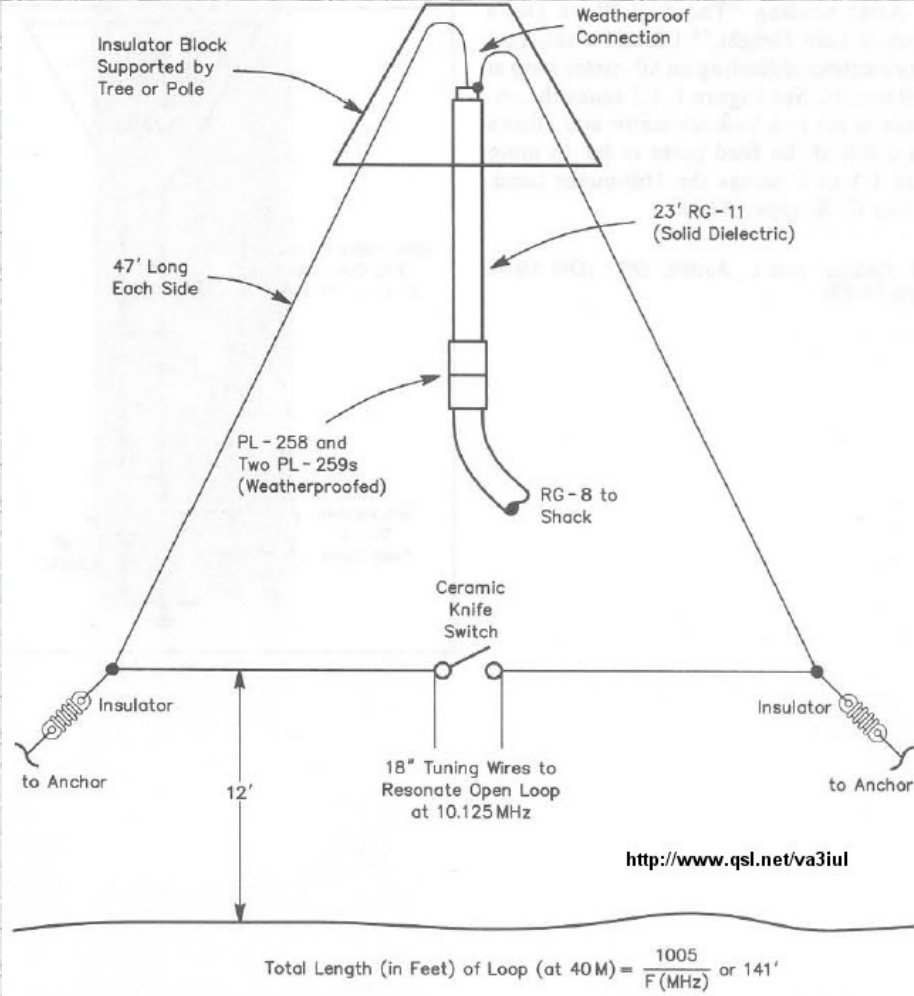
60 - Lazy Quad Antenna for 10m



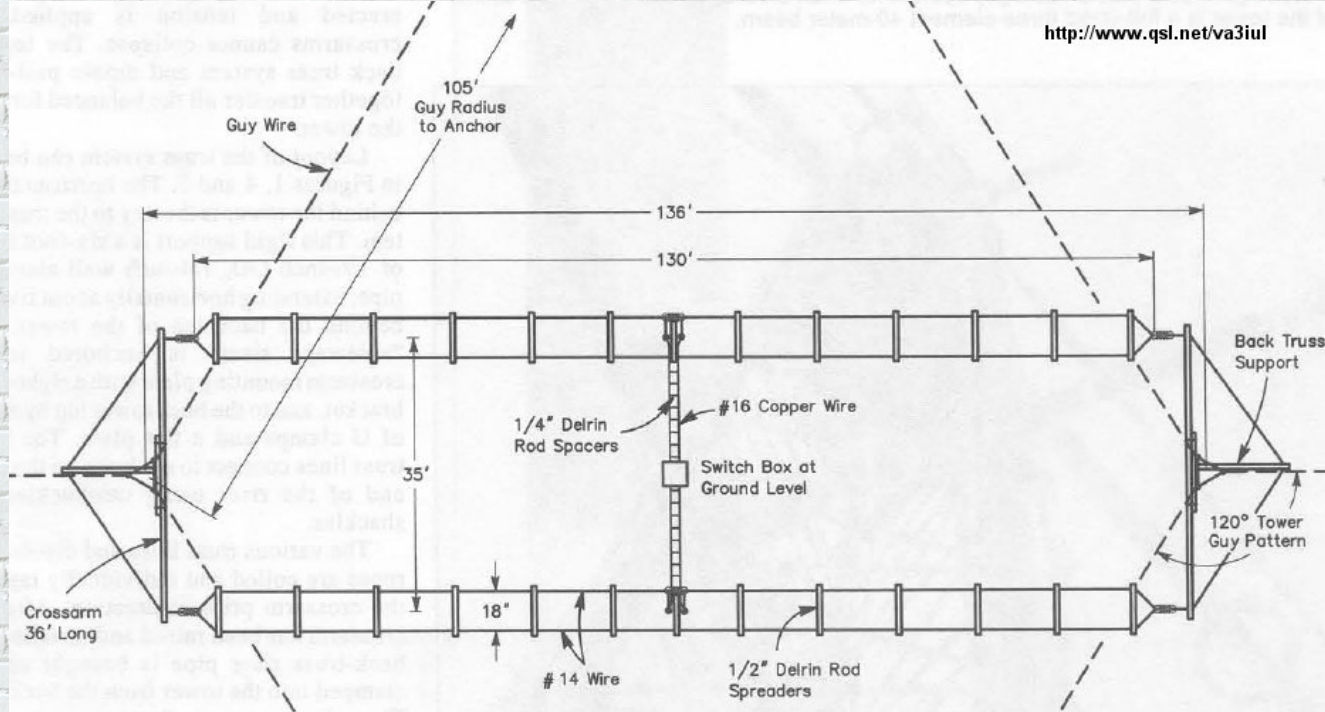
61 - Tri-band Delta Loop Antenna for 80m - 40m - 30m



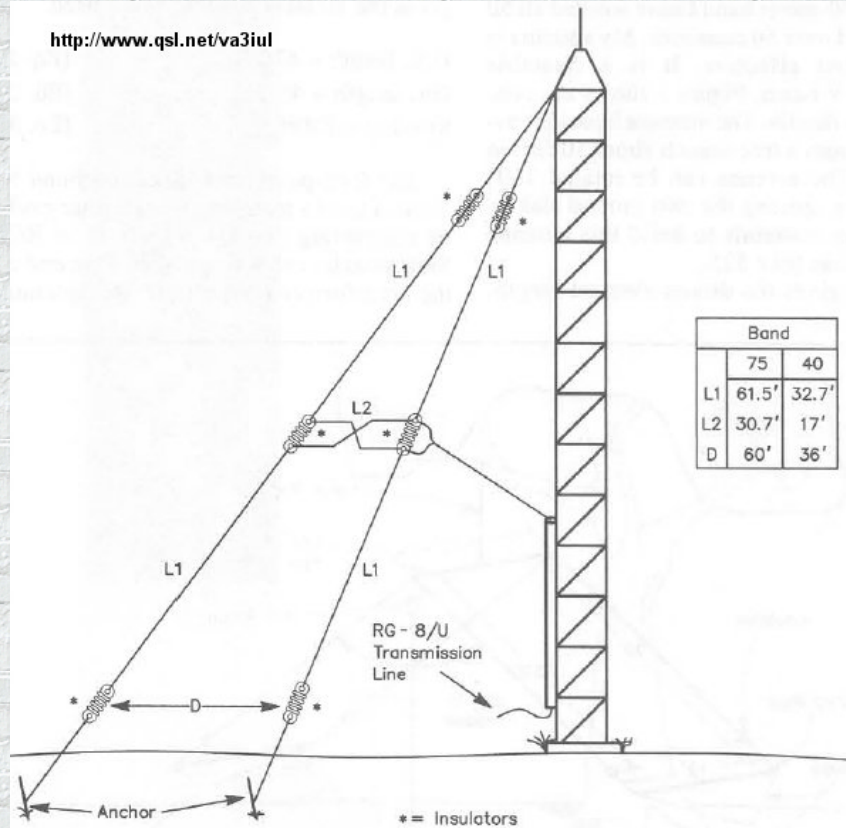
62 - Dual-band Loop Antenna for 30m - 40m



63 - Wire-Beam Antenna for 80m

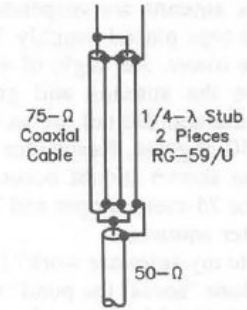
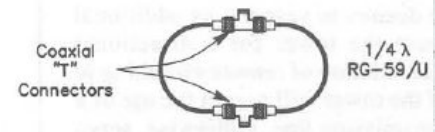
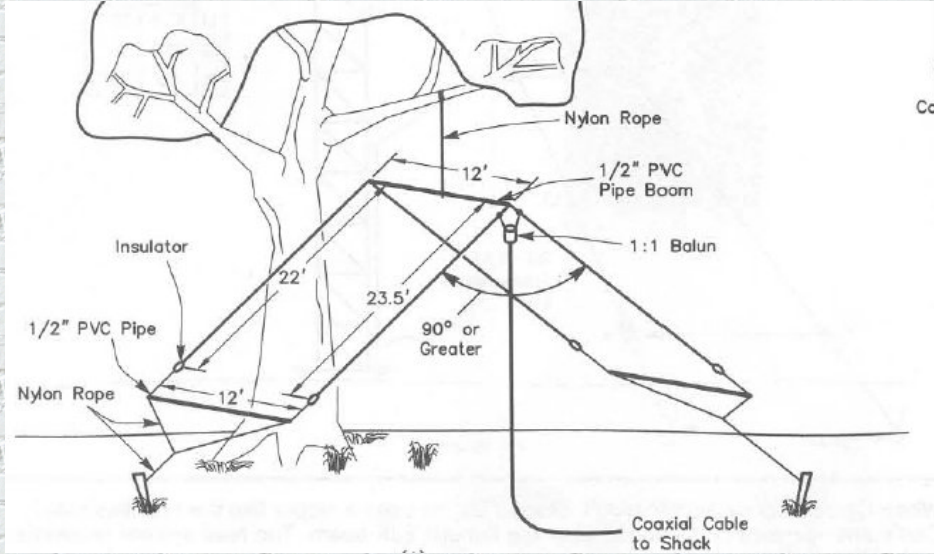


64 - Dual-Band Sloper Antenna



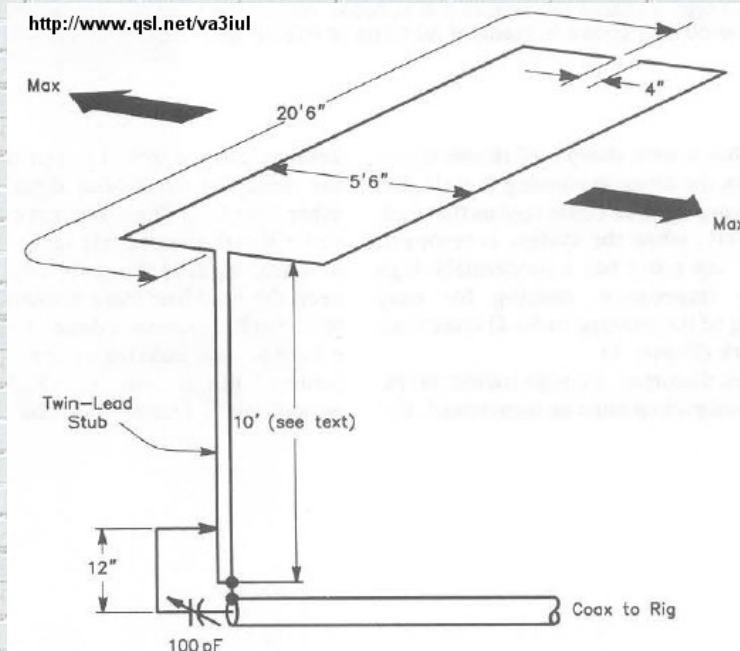
Band		
	75	40
L1	61.5'	32.7'
L2	30.7'	17'
D	60'	36'

65 - Inverted-V Beam Antenna for 30m

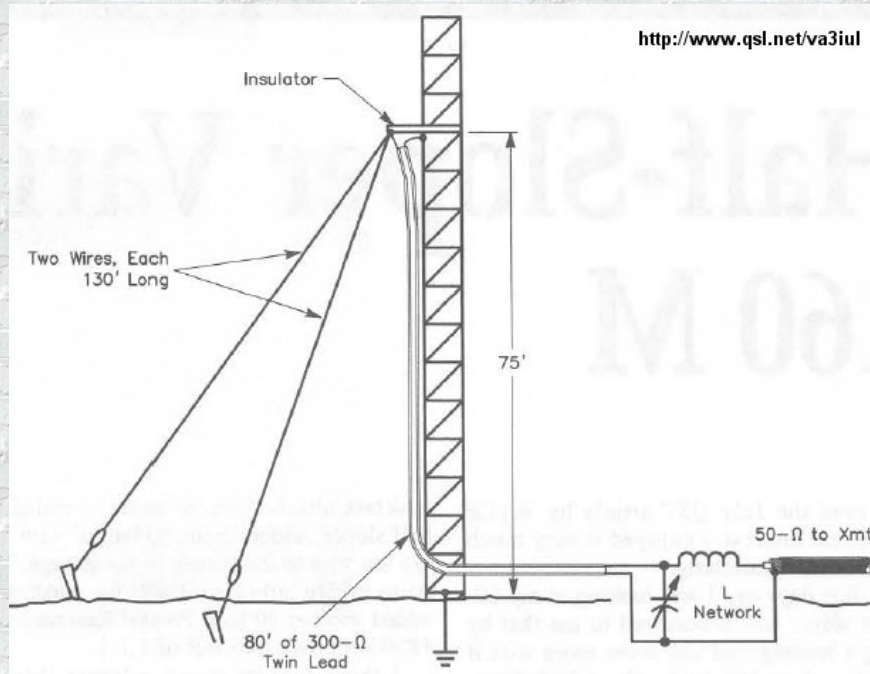


<http://www.qsl.net/va3iul>

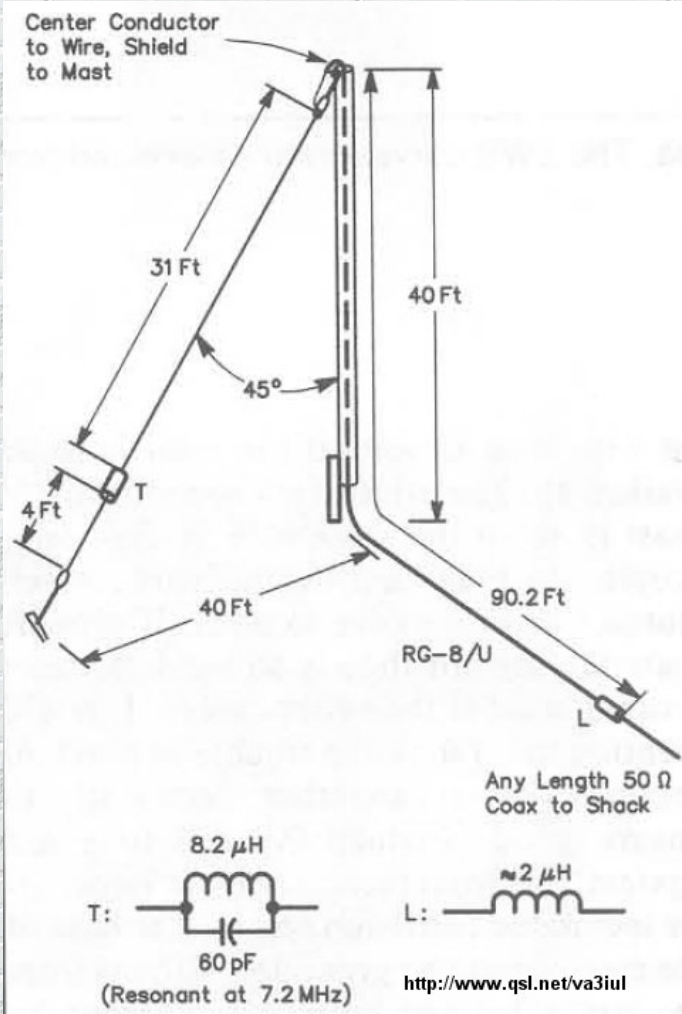
66 - ZL-Special Beam Antenna for 15m



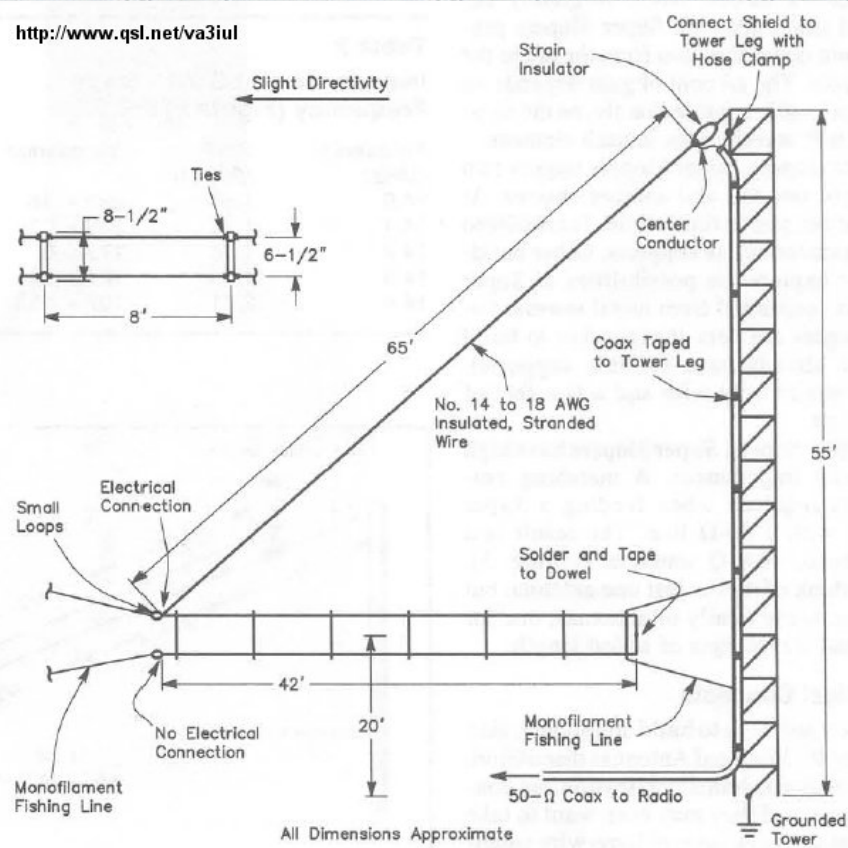
67 - Half-Sloper Antenna for 160m



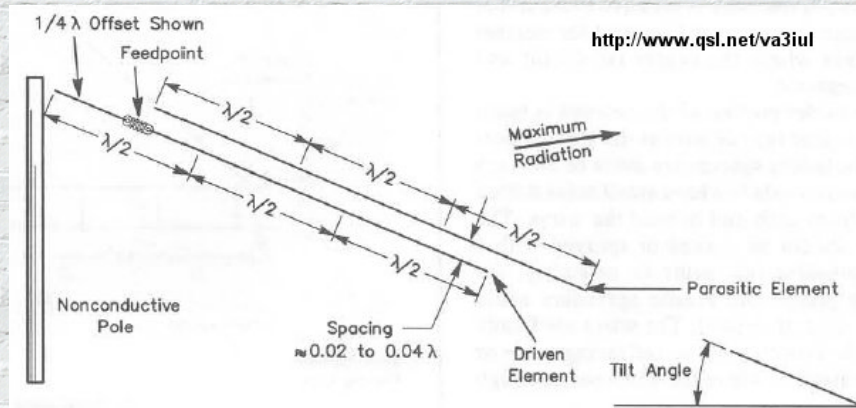
68 - Two-Bands Half Sloper for 80m - 40m



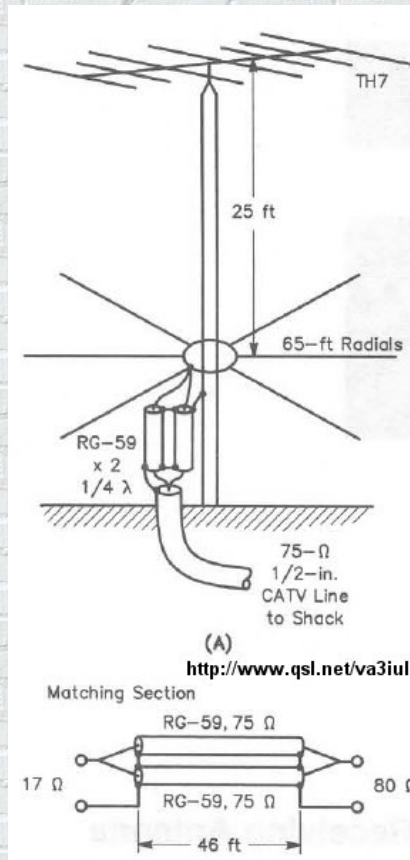
69 - Linear Loaded Sloper Antenna for 160m



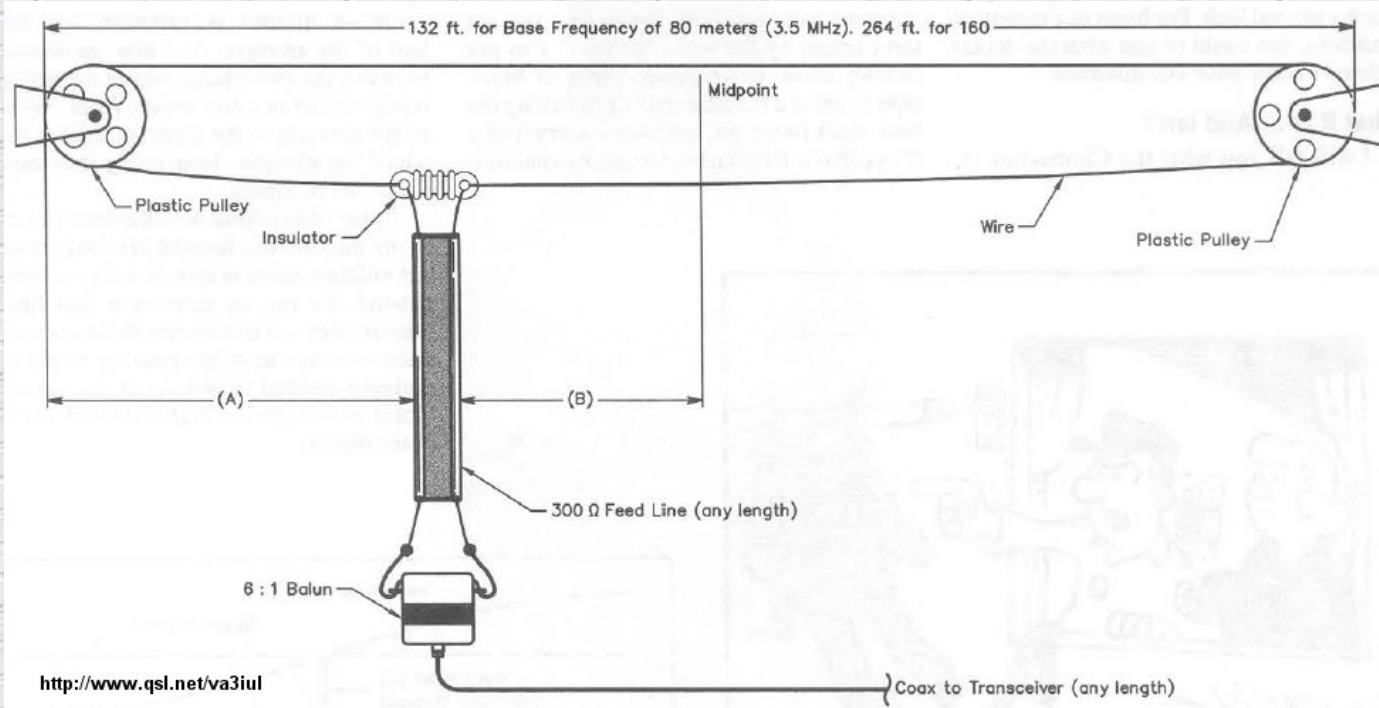
70 - Super-Sloper Antenna



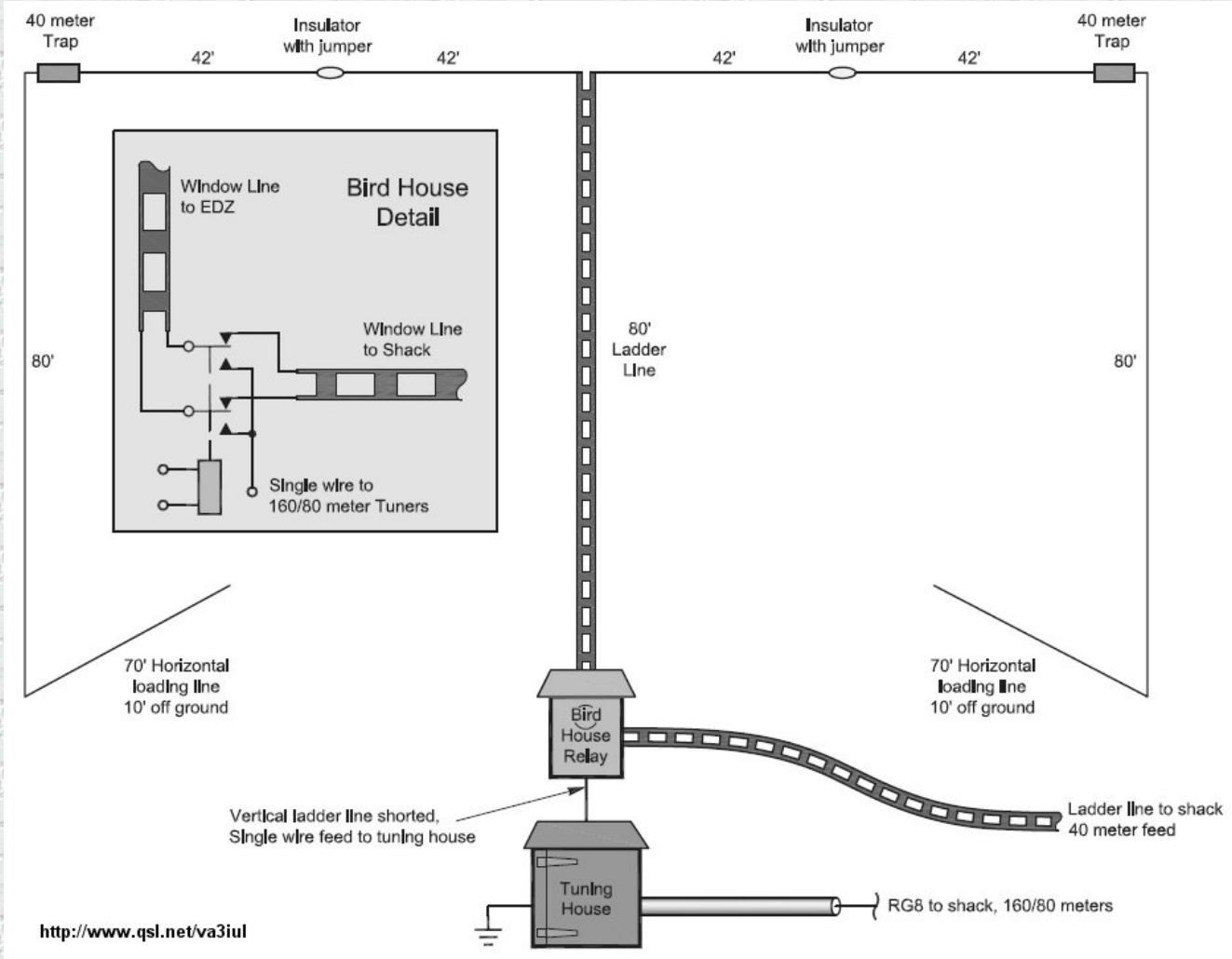
71 - Tower Pole as a Vertical Antenna for 80m



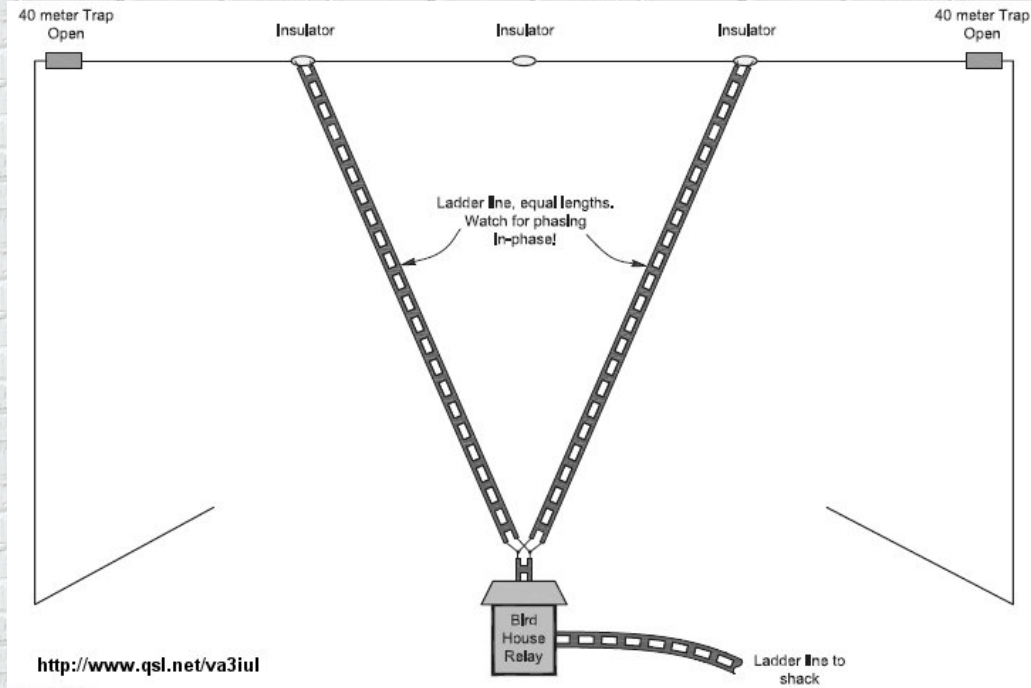
72 - Clothesline Antenna



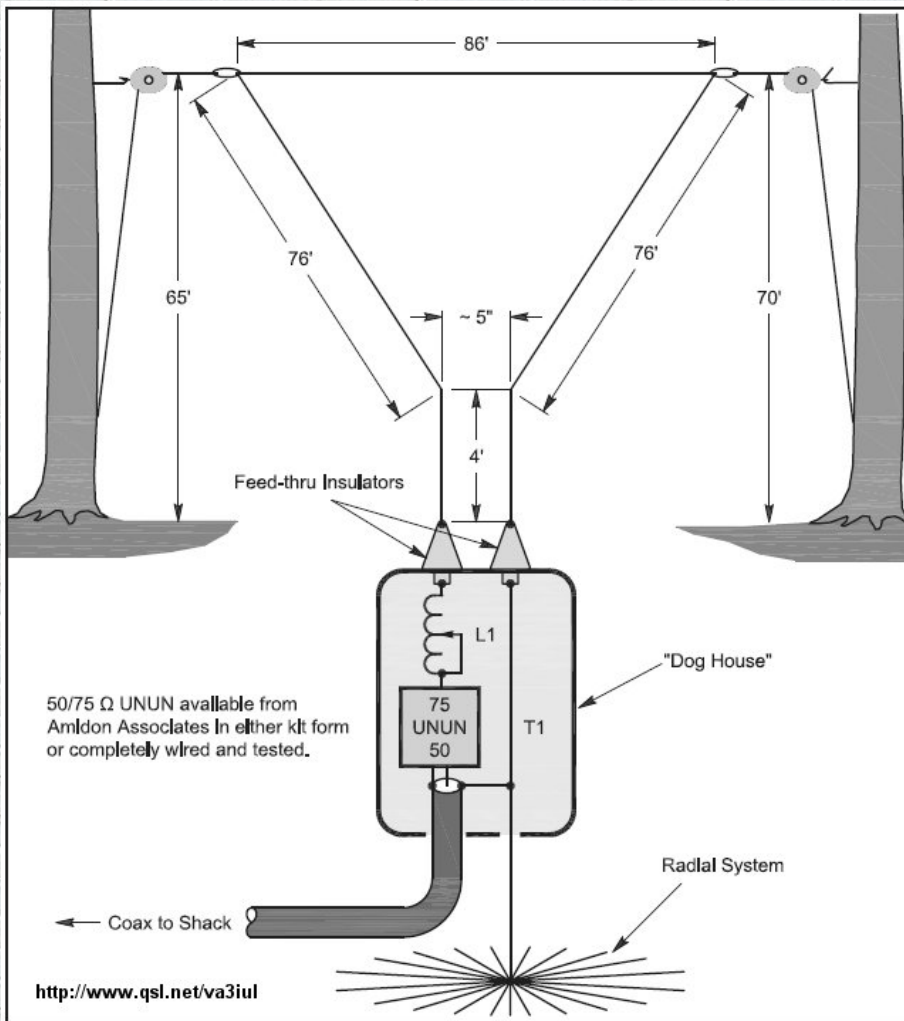
73 - Curtain Zepp Antenna for 160m, 80m, 40m



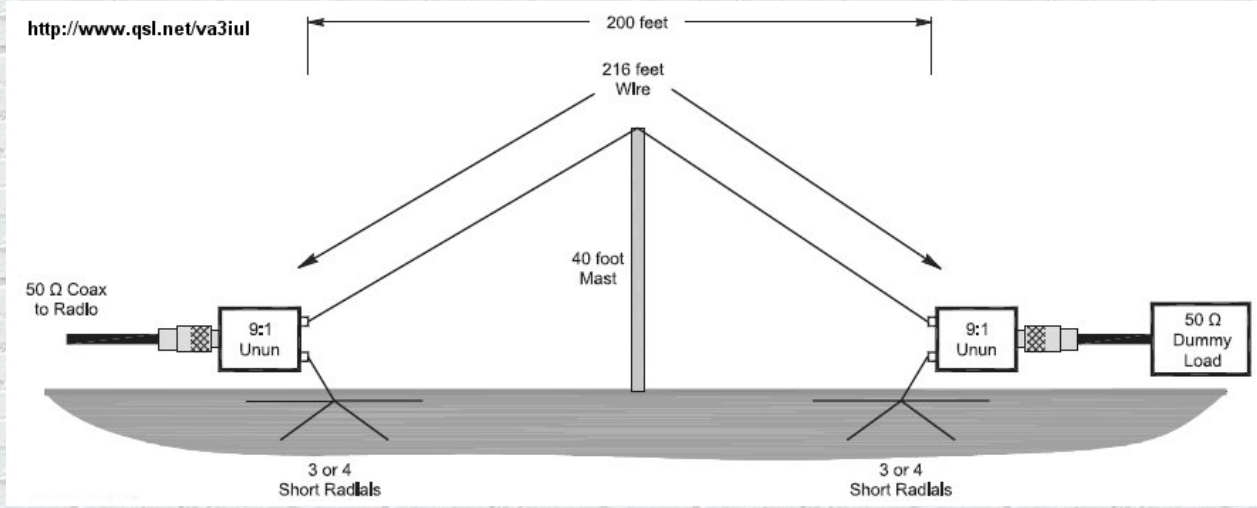
74 - Collinear Array Antenna for 40m, 30m, 20m



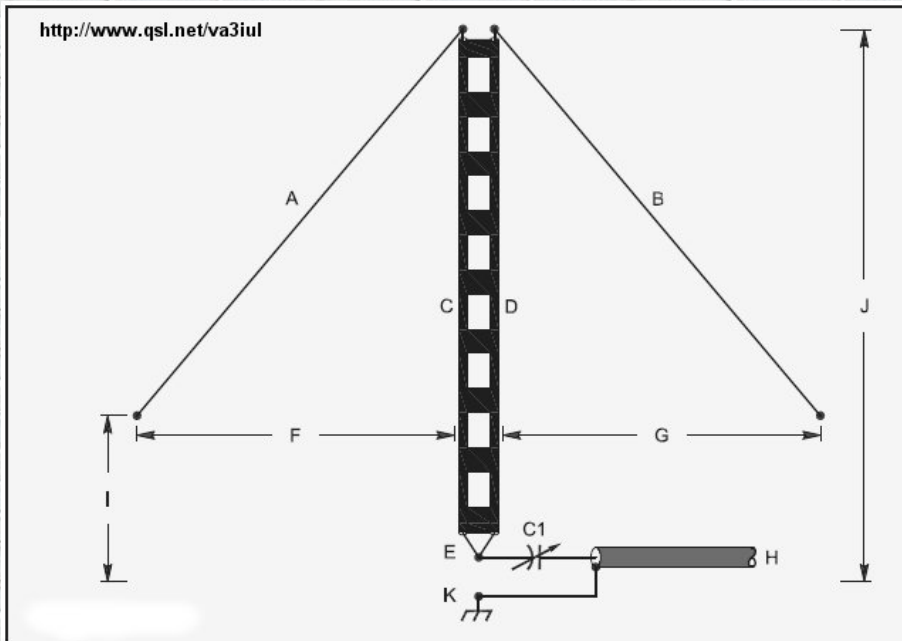
75 - 160m Inverted Delta Loop



76 - Half Rhombic Unidirectional Vertical for 20m to 6m



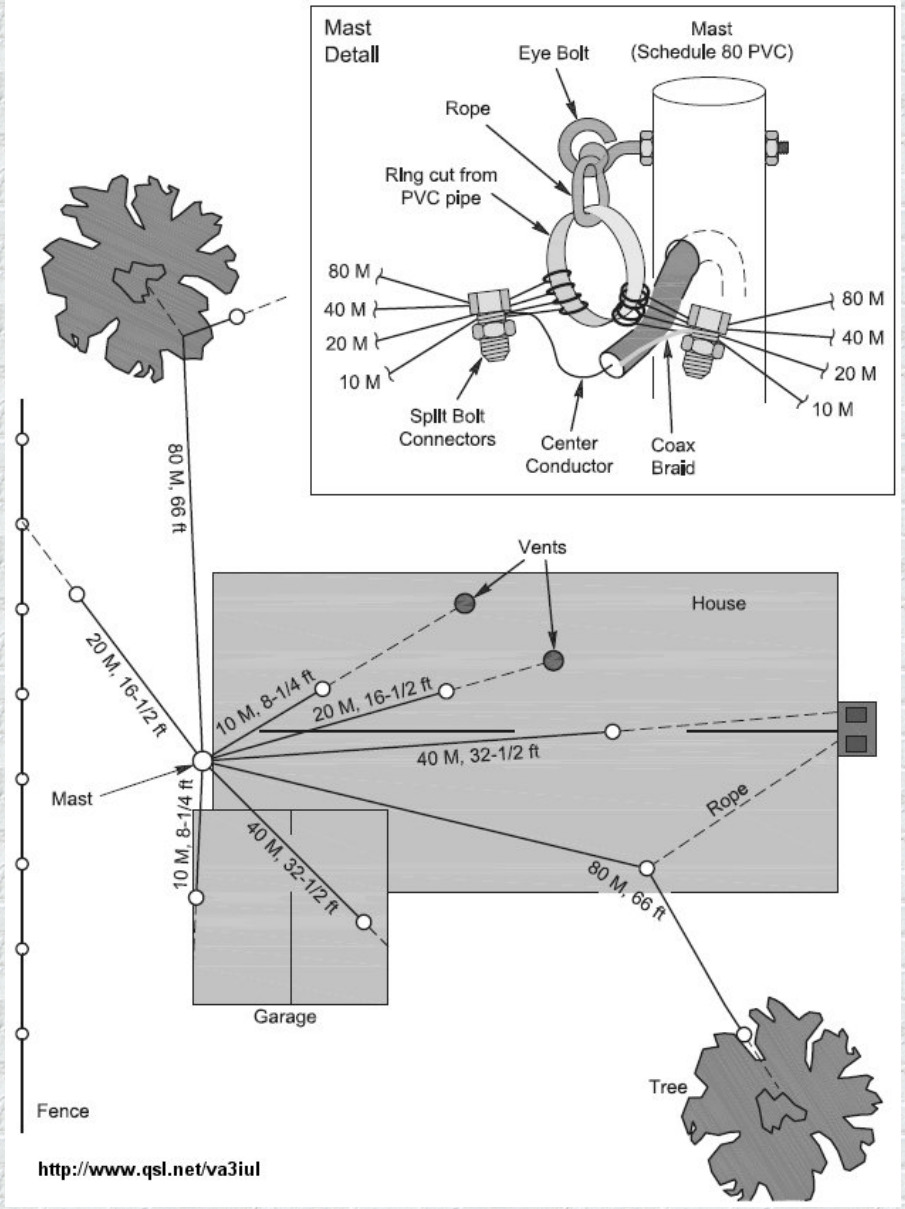
77 - Capacitance Loaded Vertical Antenna for 160m



C1 — Variable capacitor, 0-1500 pF, 7 kV.
A, B — Sloping segments of 66 foot, 4 inch pieces of #16 AWG enameled copper wire soldered to the top of segments C and D and forming a 45° angle.
C, D — 59 feet of 450 Ω open wire or window line or, alternatively, two parallel lengths of #16 AWG enameled copper wire with a 1 inch separation.
E — 1 inch triangle formed by the bottom ends of the open wire line. Solder them tightly at the vertex and connect to C1.
F, G — Distance between the lower ends

of segments A and B from segments C and D, 51 feet.
H — Any length of 50 Ω coaxial cable (RG-213 in this case). The central conductor must be soldered to C1, and the braid to the ground radials.
I — Approximately 16 feet from ground to lower ends of sloping segments A and B.
J — 60 feet from antenna top to bottom.
K — Ground radials, 60 ¼ λ (the more the better — 32 will form a reasonable ground).

78 - Fan Dipole Antenna for 80m to 6m



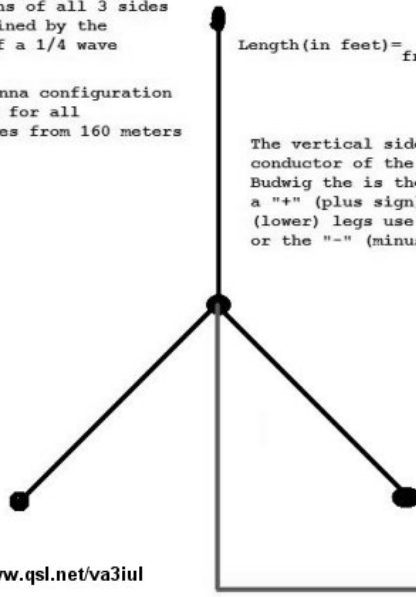
79 - Wire Ground Plane Antenna

The lengths of all 3 sides is determined by the formula of a 1/4 wave antenna

This antenna configuration will work for all frequencies from 160 meters to VHF.

$$\text{Length (in feet)} = \frac{234}{\text{frequency in MHz}}$$

The vertical side uses the inner conductor of the coax. On the Budwig the is the side the shows a "+" (plus sign). The outer (lower) legs use the outer braid or the "-" (minus sign).



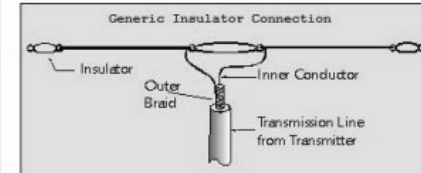
<http://www.qsl.net/va3iul>

Coax to XCVR or XMTR

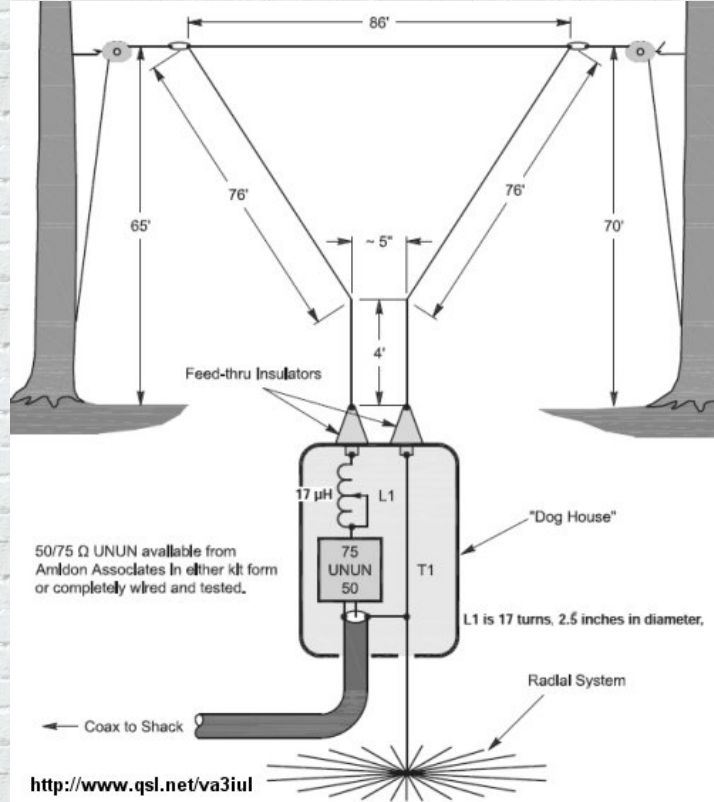
Budwig Antenna Connector



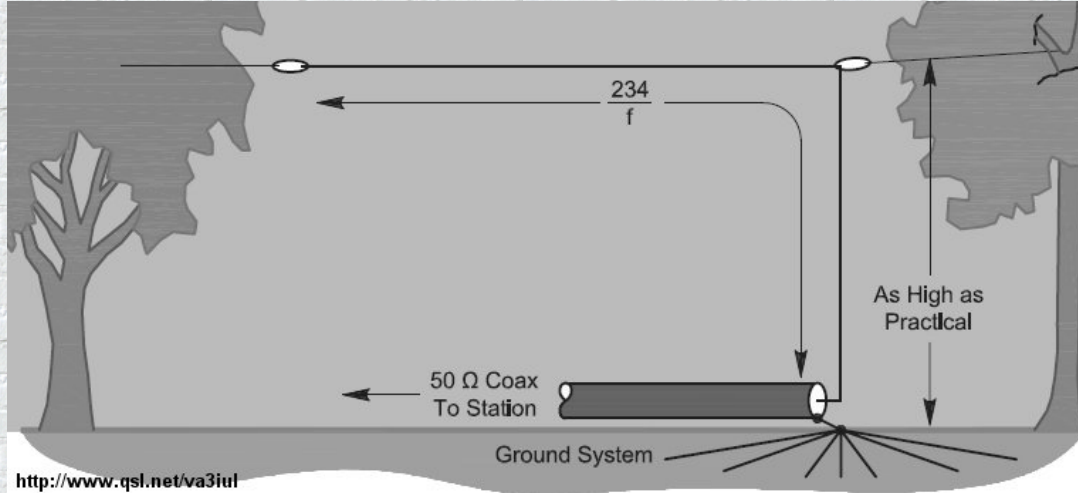
SO-239 Chassis mount, 4 hole



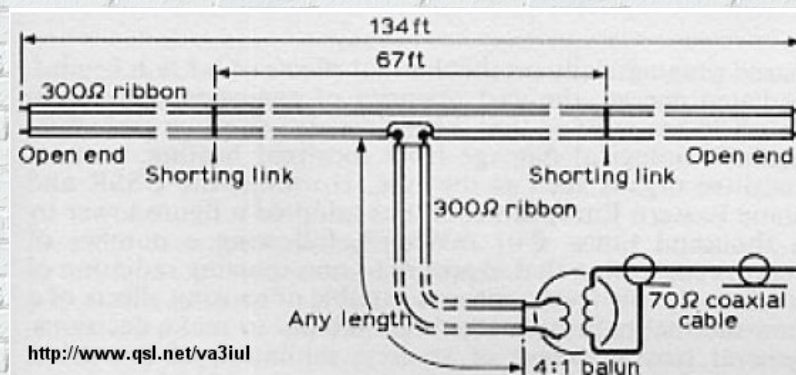
80 - Inverted Delta Loop Antenna for 160m



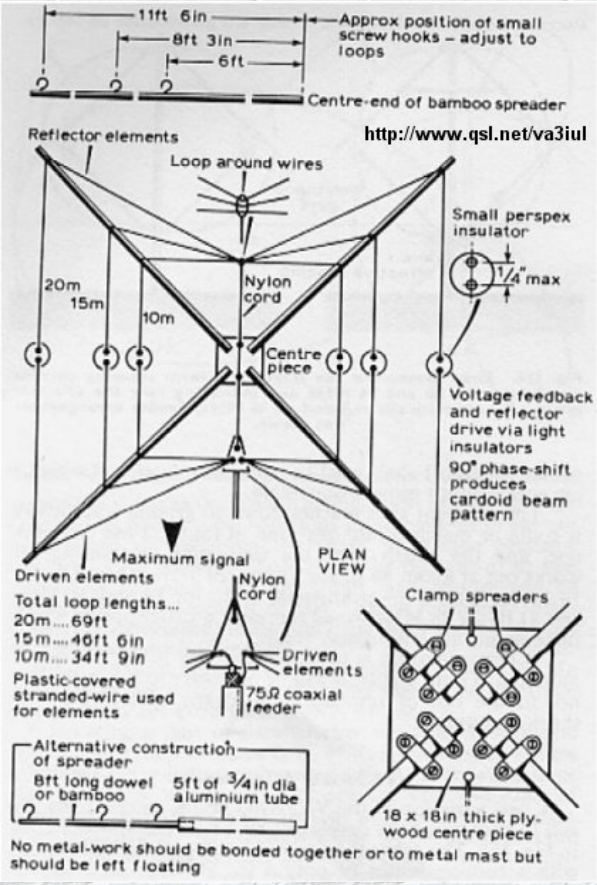
81 - Inverted-L for 160m



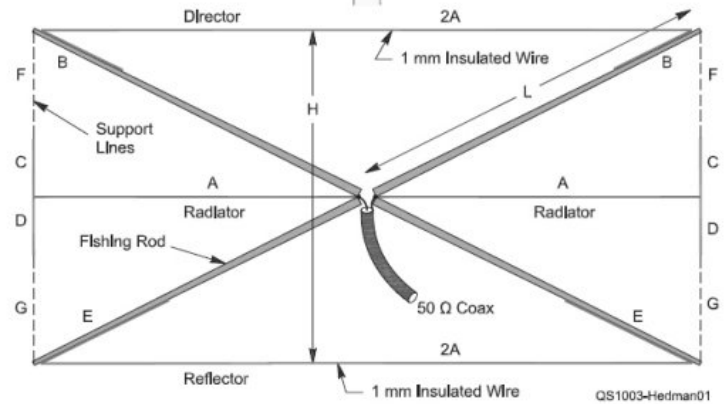
82 - 300ohm-Ribbon Dual Band Dipole



83 - Tri-Band Beam for 20m, 15m, 10m



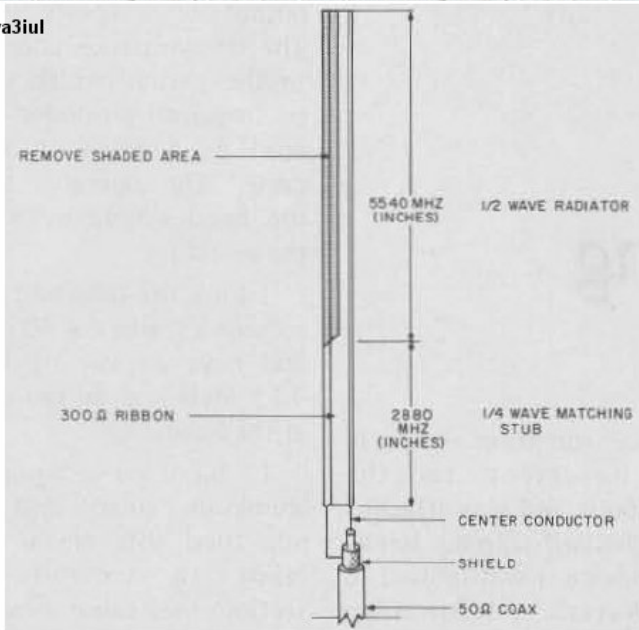
84 - Mini-Horse Yagi Antenna



QS1003-Herdmn01

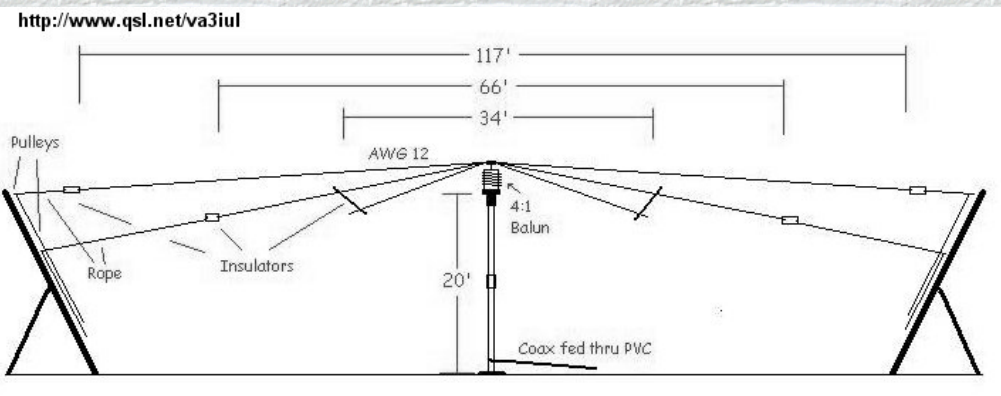
MHz	A	B	C	D	E	F	G	H	L
144	1' 2.2"	0' 4.7"	0' 3.5"	0' 1.8"	0' 7.1"	0' 4.7"	0' 6.5"	1' 4.5"	1' 4.3"
28	5' 11.6"	1' 10.8"	1' 6.9"	0' 9.4"	2' 11.8"	1' 10.8"	2' 8.3"	6' 11.4"	6' 11.0"
21	7' 11.6"	2' 6.3"	2' 1.2"	1' 0.6"	3' 11.6"	2' 6.3"	3' 6.9"	9' 3.0"	9' 2.6"
14	11' 11.3"	3' 9.7"	3' 1.8"	1' 6.9"	5' 11.2"	3' 9.7"	5' 4.6"	13' 10.9"	13' 9.7"
7.1	23' 10.5"	7' 7.3"	6' 3.6"	3' 1.8"	11' 10.5"	7' 7.3"	10' 9.1"	27' 9.8"	27' 7.4"

85 - Half-Rhombic Directive Antenna for 20m to 6m

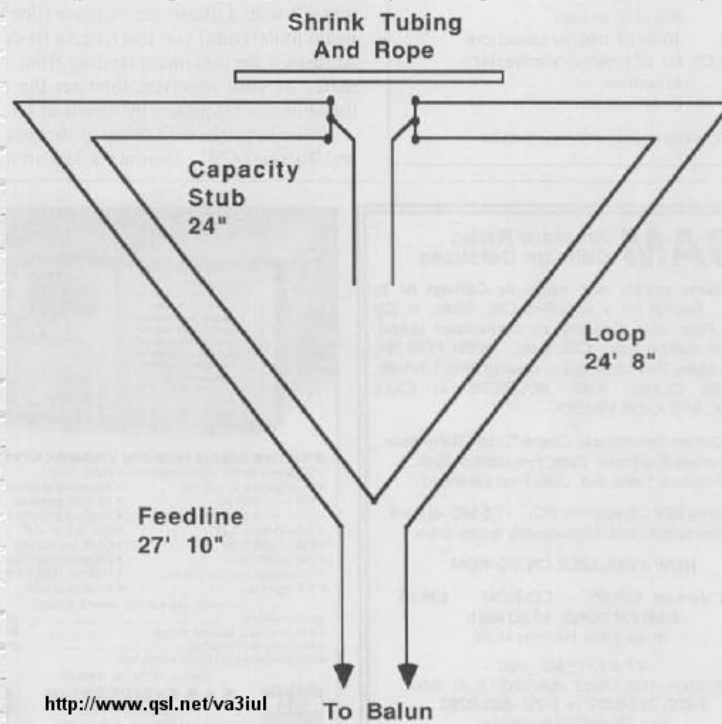


Frequency (MHz)	28.0	28.5	29.0	50.0	51.0	52.0	144	145	146	147
Radiator (inches)										
1/2 wave	197.8	194.3	191.0	110.8	108.6	106.5	38.4	38.2	37.9	37.7
Stub (inches)										
1/4 wave	102.8	101.0	99.3	57.6	56.4	55.3	20.0	19.8	19.7	19.6

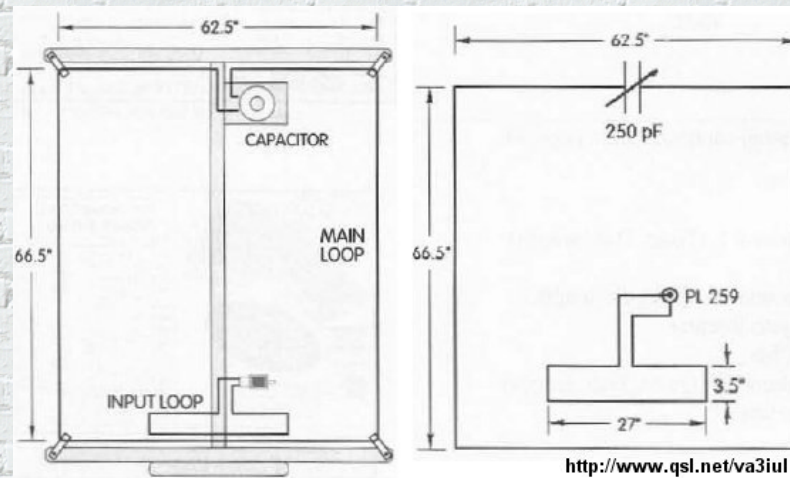
86 - Fan-Dipole Antenna for 80m, 40m, 20m



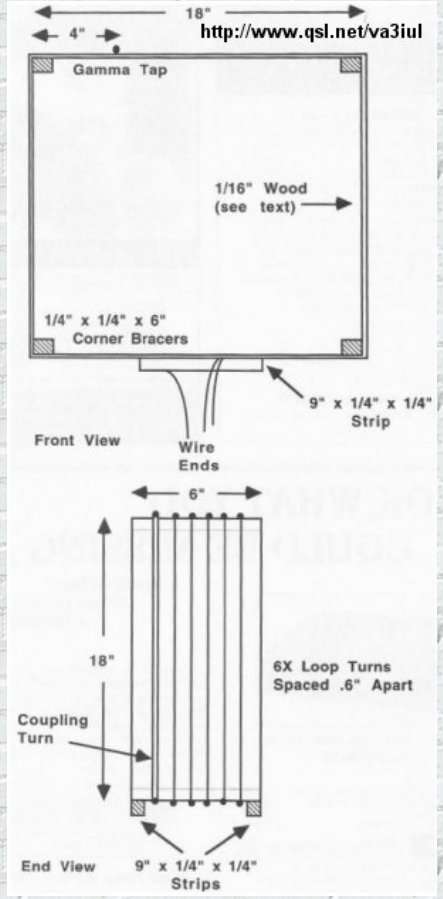
87 - Capacity Tuned Folded Loop Antenna for 20m



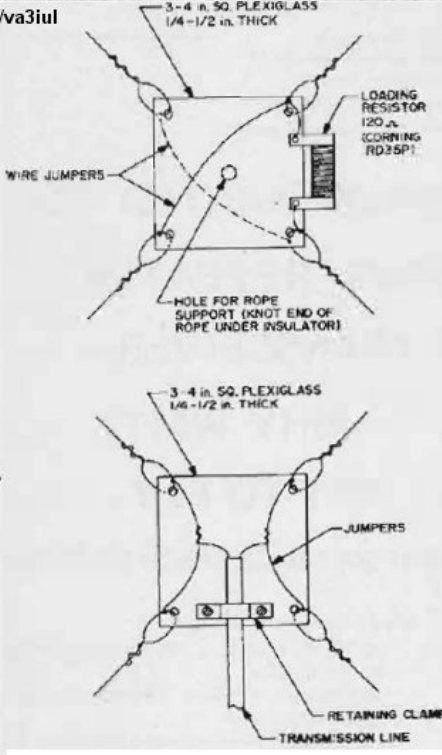
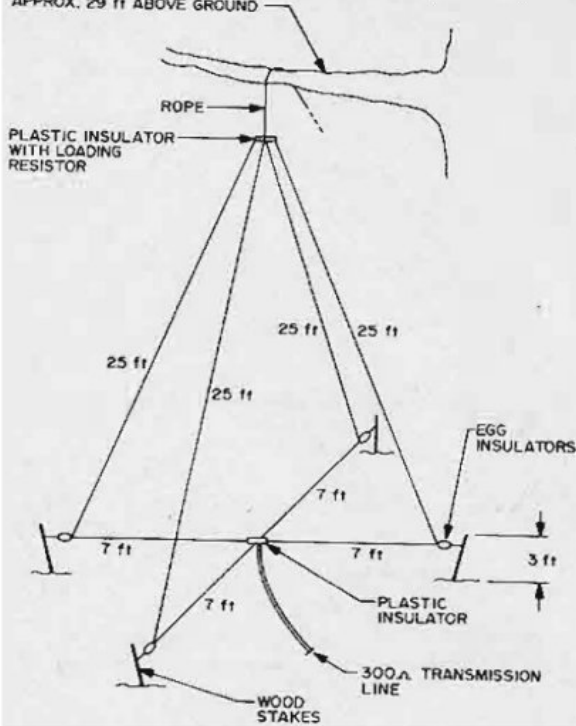
88 - Indoor Loop Antenna for 80m to 30m



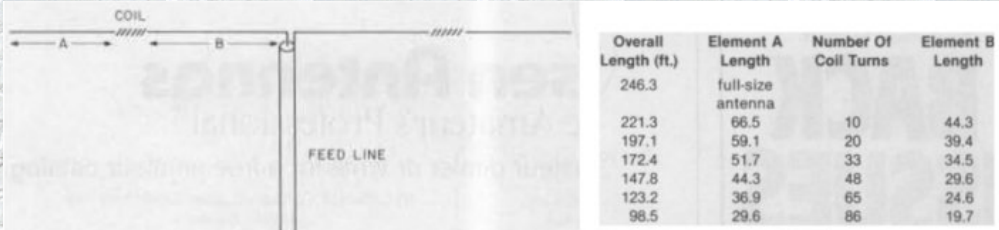
89 - Indoor Loop Antenna for 80m



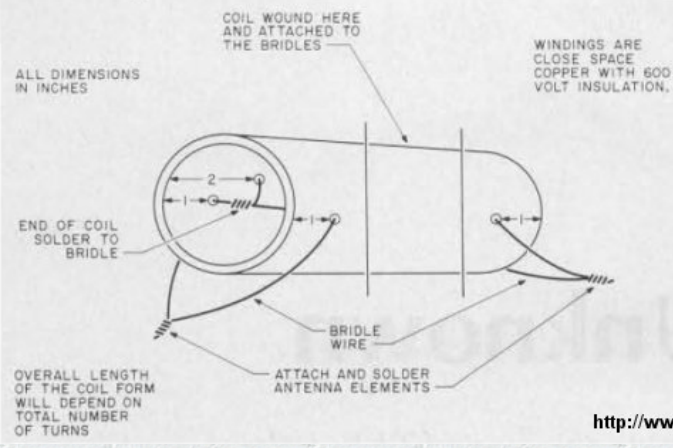
90 - Double-Delta Antenna 80m and 40m



91 - Inductance-Loaded Shortened Dipole for 160m

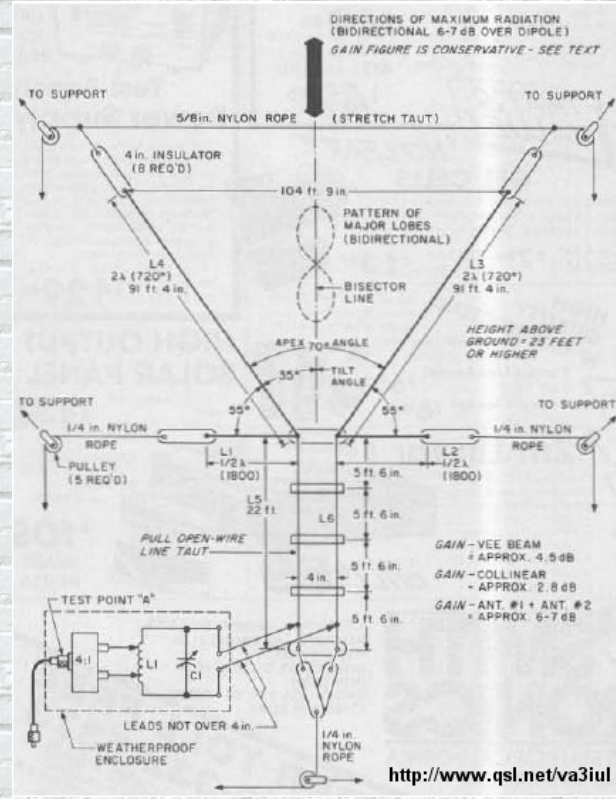


Overall Length (ft.)	Element A Length	Number Of Coil Turns	Element B Length
246.3	full-size antenna		
221.3	66.5	10	44.3
197.1	59.1	20	39.4
172.4	51.7	33	34.5
147.8	44.3	48	29.6
123.2	36.9	65	24.6
98.5	29.6	86	19.7

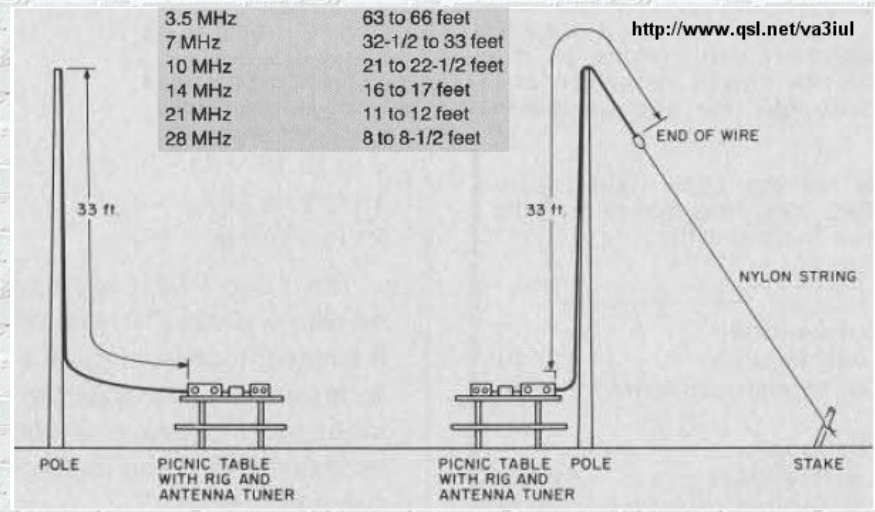


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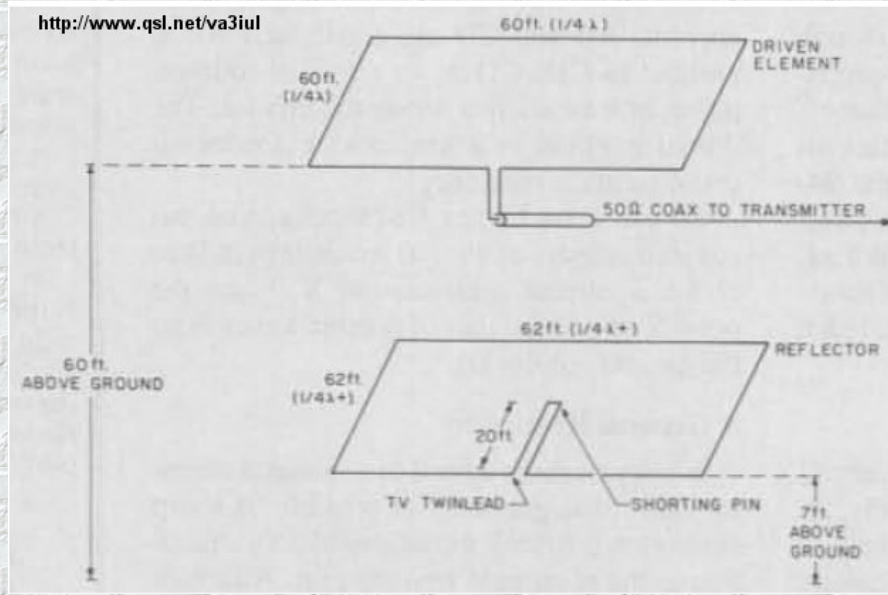
92 - V-Beam Antenna for 15m



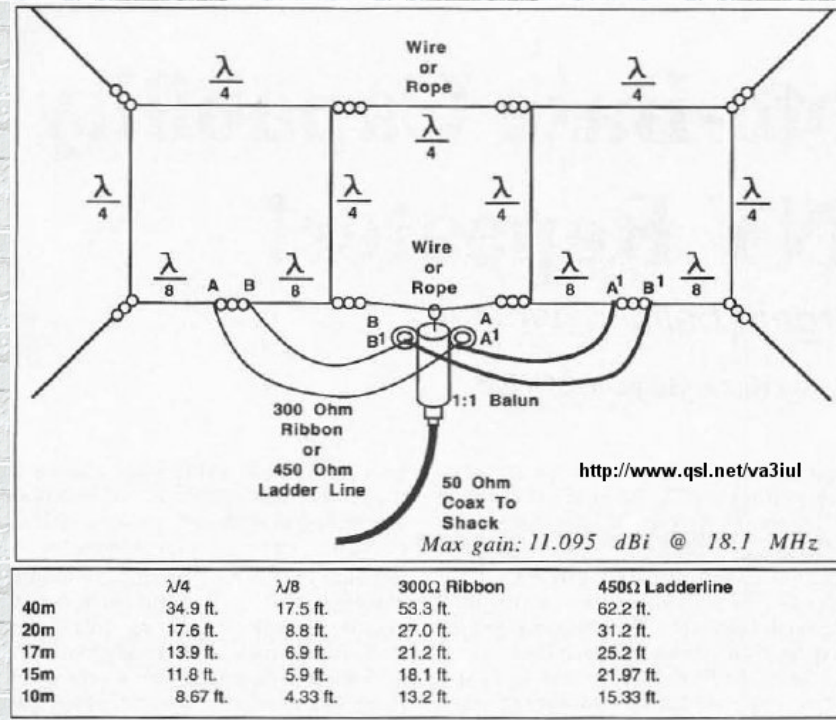
93 - Picnic Vertical Wire Antenna



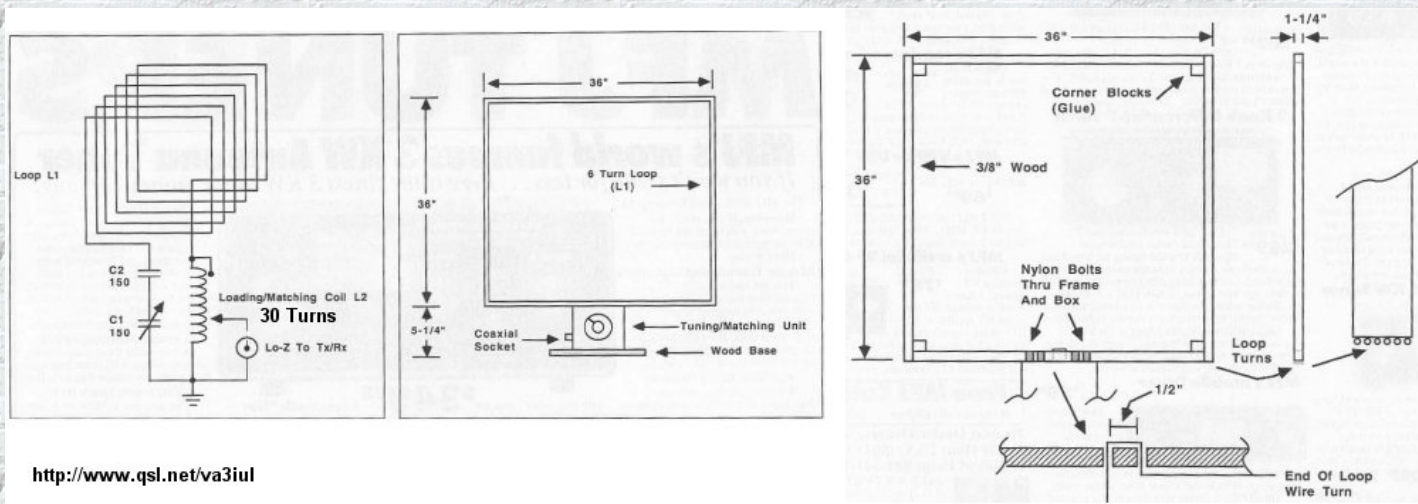
94 - Laid-Back Quad Antenna for 80m



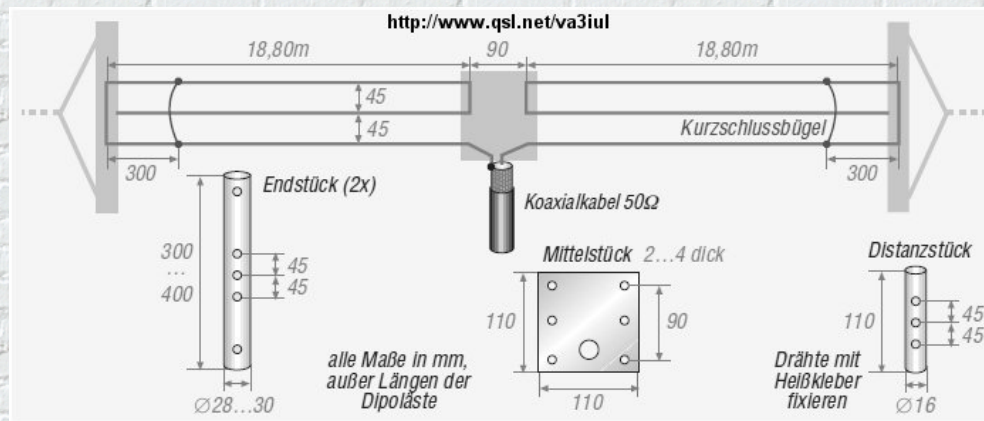
95 - Phased Loop Antenna



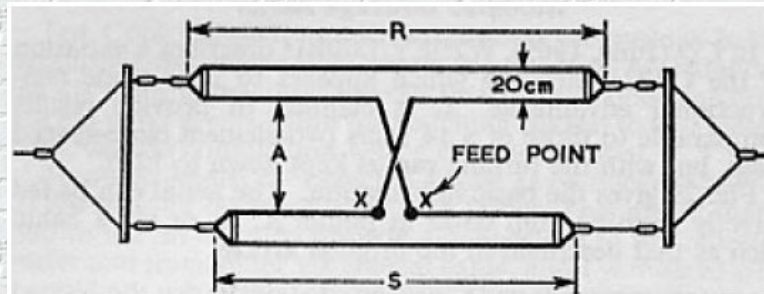
96 - Loop Antenna for TX for 160m



97 - Morgain-Dipole Antenna for 160m and 80m



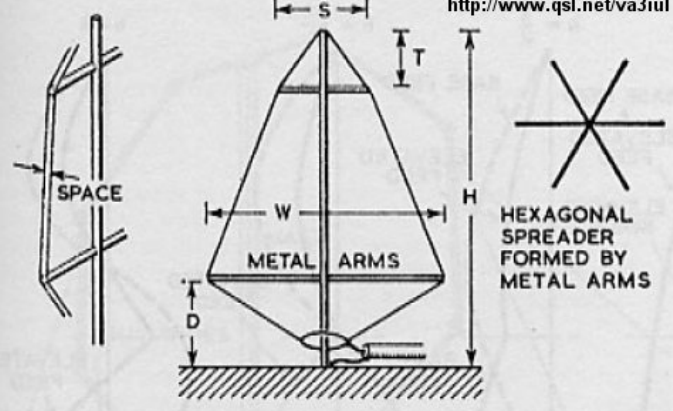
98 - ZL-Special for 20m, 15m, 10m



	S	R	A	A
28 Mc/s	5.09m	5.39m	1.29m	$\frac{1}{2}\lambda$
	4.17m	4.42m	1.06m	$\frac{1}{2}\lambda$
21 Mc/s	6.85m	7.24m	1.72m	$\frac{1}{2}\lambda$
	5.62m	5.94m	1.41m	$\frac{1}{2}\lambda$
14 Mc/s	10.30m	10.85m	2.58m	$\frac{1}{2}\lambda$
	8.45m	8.90m	2.12m	$\frac{1}{2}\lambda$

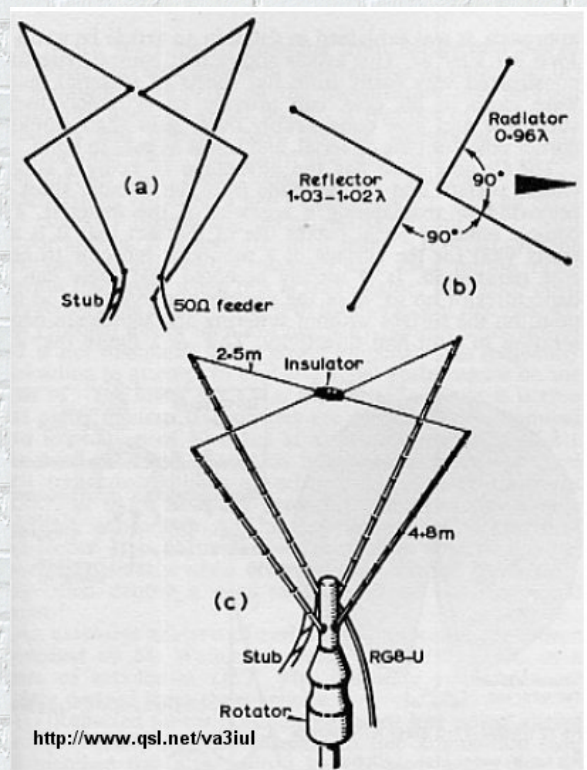
<http://www.qsl.net/va3iul>

99 - Biconical Antenna

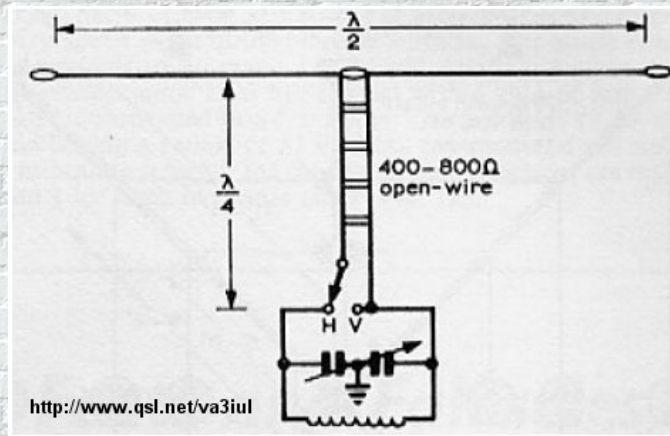


	H	W	D	T	S	SPACE	WIRE
3.5 - 15 Mc/s	43'	17'-8"	16'-10"	2'-2"	5'-10"	3"	NR 8
7 - 28 Mc/s	23'	9'-6"	9'	12"	3'-2"	2"	NR 10
14 - 56 Mc/s	12'	5'	4'-9"	8"	1'-8"	1"	NR 12

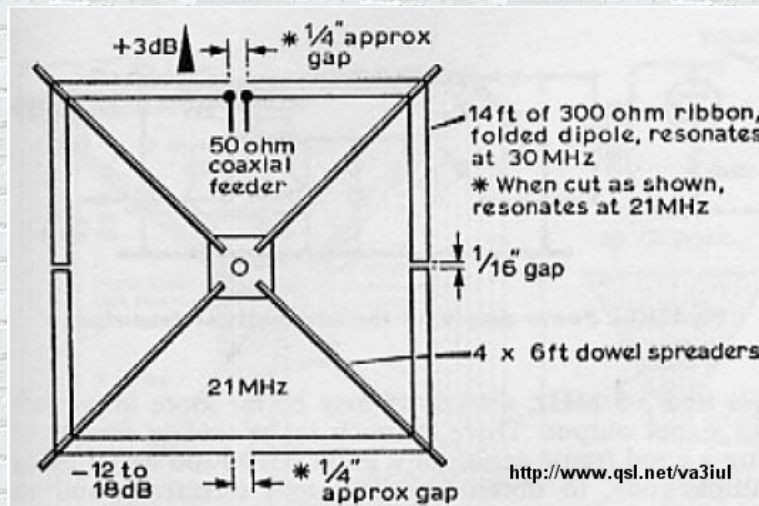
100 - Directive Delta-Birdcage Antenna for 20m to 10m



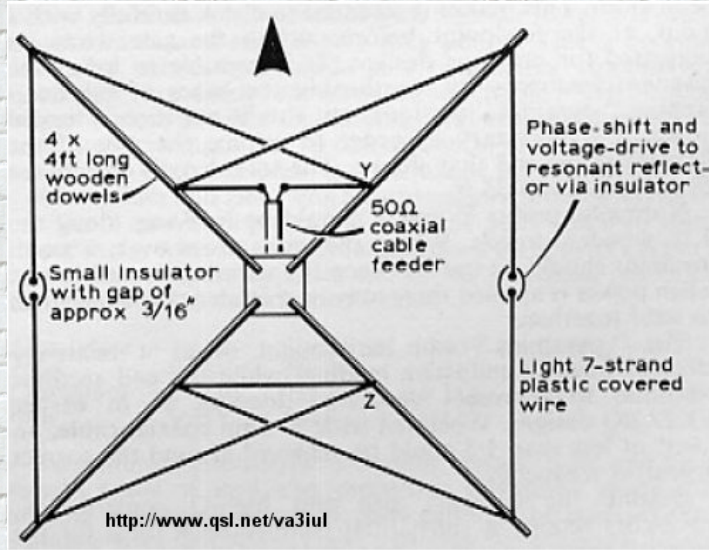
101 - Dual Polarization Antenna for 80m and 40m



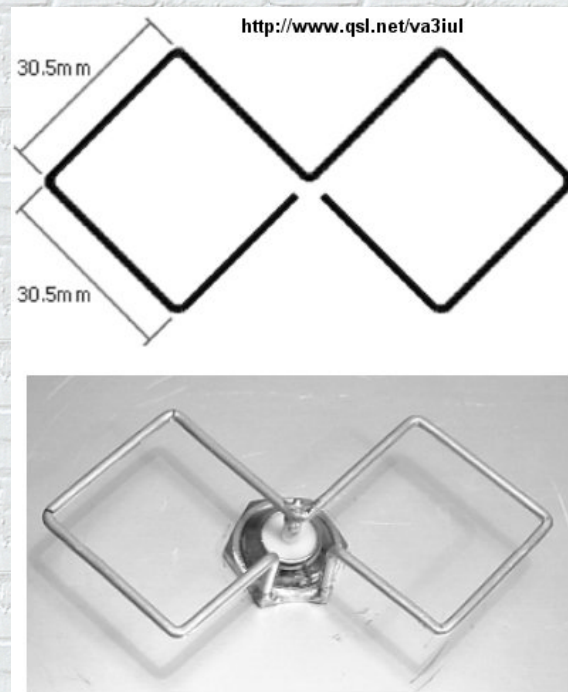
102 - Directive 300-ohm-Ribbon Folded Dipole for 15m



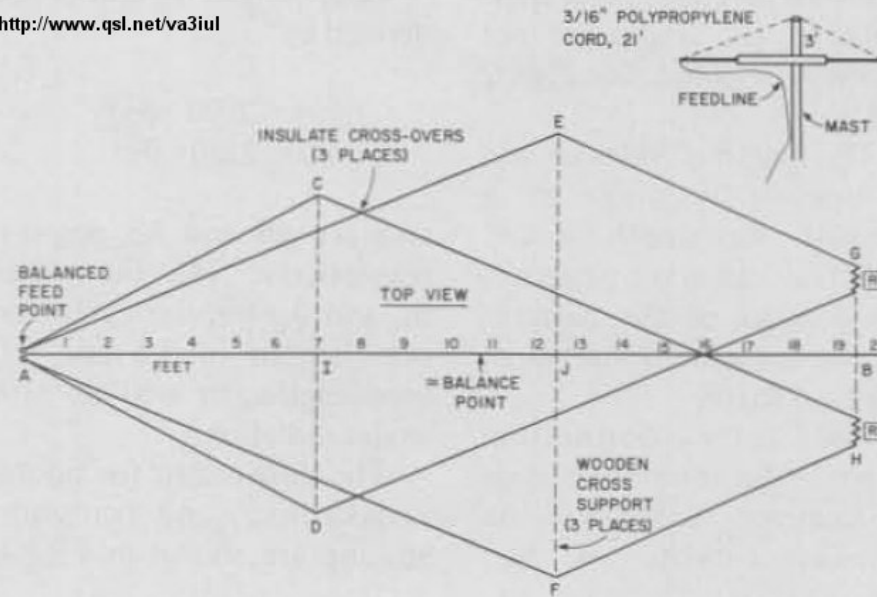
103 - Miniature Directive Antenna for 10m



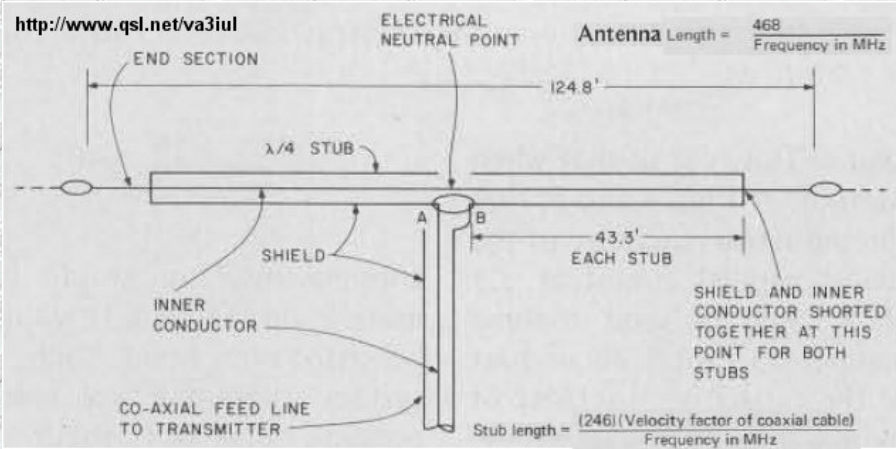
104 - Biquad Antenna 12dBi-Gain for 2.4GHz



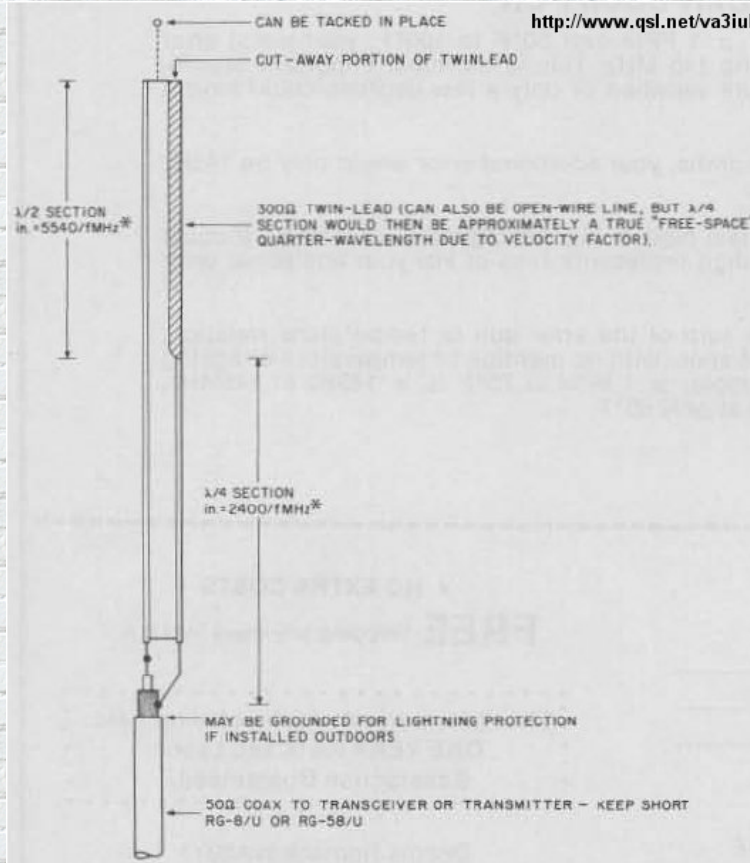
<http://www.qsl.net/va3iul>



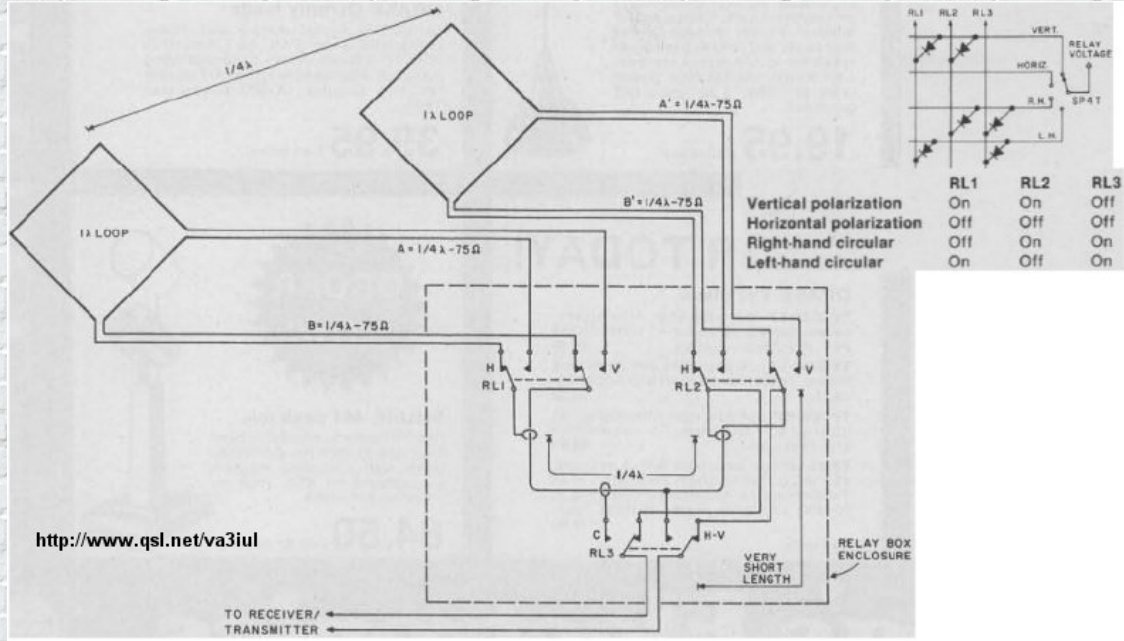
Dual rhomboid antenna for 435-870 MHz. Beamwidth $\approx 10^\circ H \times 6^\circ V$. Gain over DP ≈ 26 dB. Boom length: AB = 19'6". Support spacing: AI = 7'; IJ = 5'6"; JB = 7'. Support length: CD = 7'3"; EF = 10'3"; GH = 3'0". Rhomboid sides: AC, AD, EG, FH = 7'9.5"; AE, AF, CH, DG = 13'5.5". Feedline: Wire needed: 14 AWG formvar, $\approx 86'0"$. Boom material: AI, JB = wood; IJ = metal. Cross support: CD, EF, GH = wood. Terminators: R1, R2 = 600 Ohms; Watts



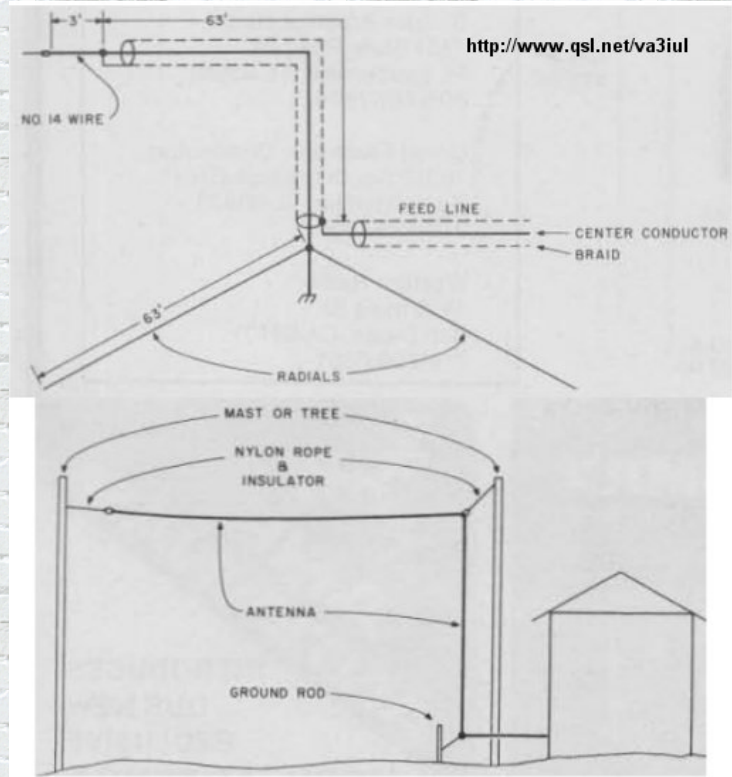
107 - J-Style Antenna



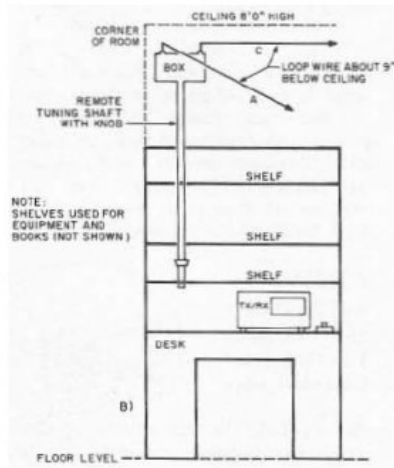
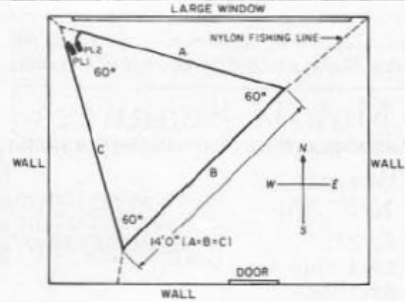
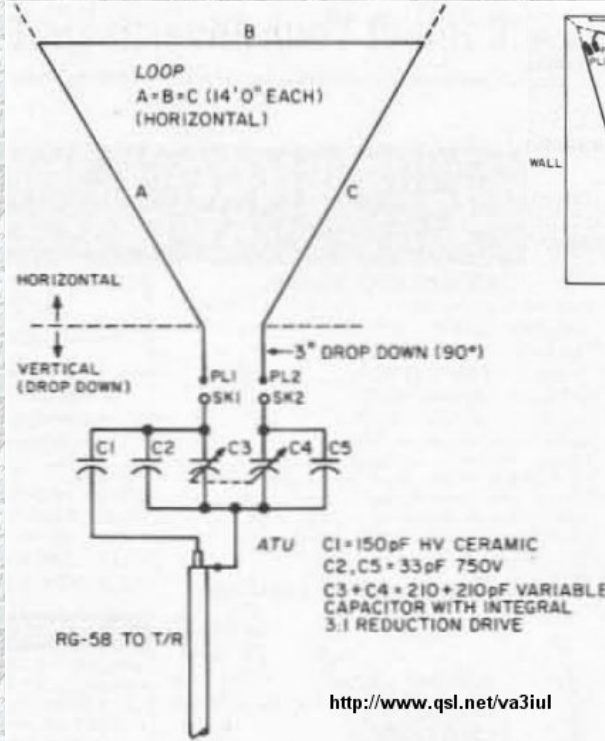
108 - Vertical / Horizontal / Circular Polarization Antenna



109 - Coax Inverted-L Antenna for 80m

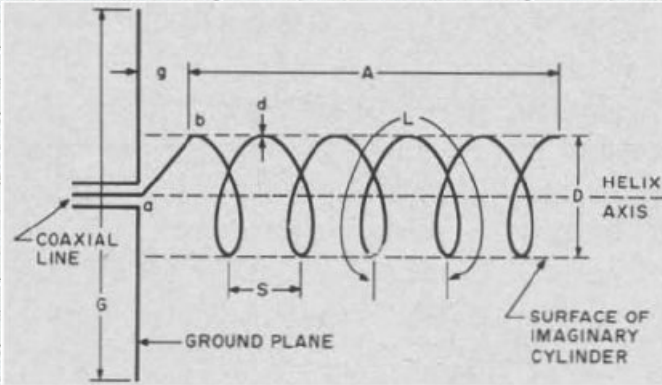


110 - Indoor Compact Loop Antenna for 80m



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111 - Helix Antenna



D = Diameter of the helix
 S = Spacing between turns
 $\alpha = \text{Pitch angle} = \text{Arctan} \left(\frac{S}{\pi D} \right)$
 L = Length of 1 turn
 n = Number of turns
 A = Axial length = nS
 d = Diameter of conductor
 g = Distance of ground plane to first turn
 G = Ground plane diameter

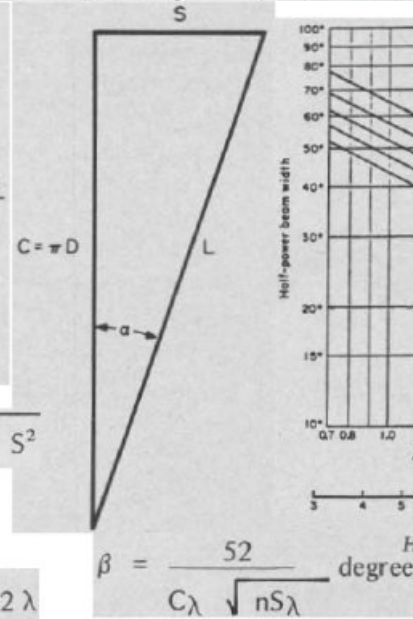
$$L = \sqrt{(\pi D)^2 + S^2}$$

$$D = 0.32 \lambda$$

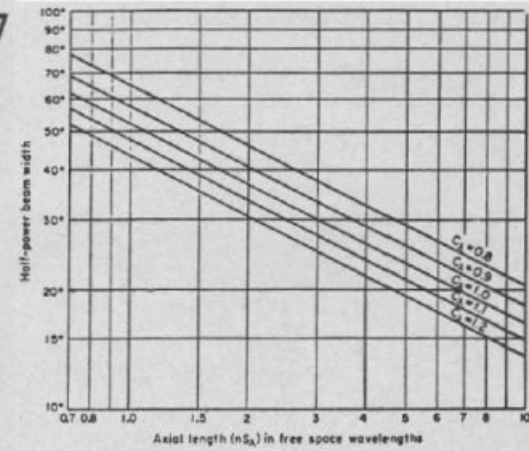
$$S = 0.22 \lambda$$

$$G \geq 0.80 \lambda$$

$$g = \frac{S}{2} = 0.12 \lambda$$



$$\beta = \frac{52}{C \lambda \sqrt{n S \lambda}} \text{ degrees}$$

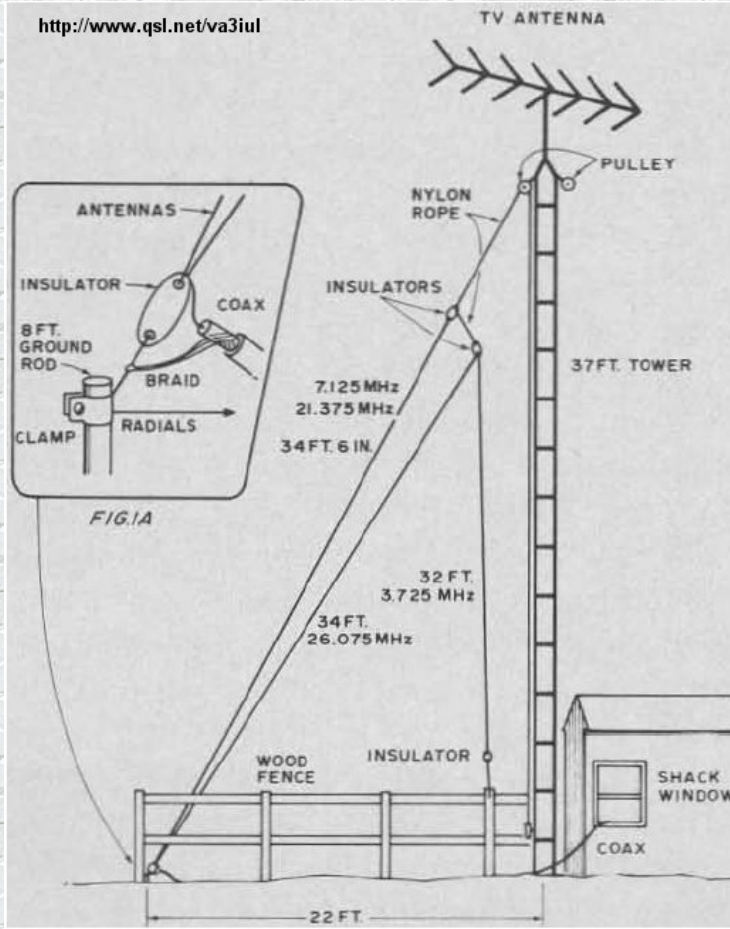


Number of turns (n) for $C \lambda = 1.0$ and $\alpha = 12.5^\circ$

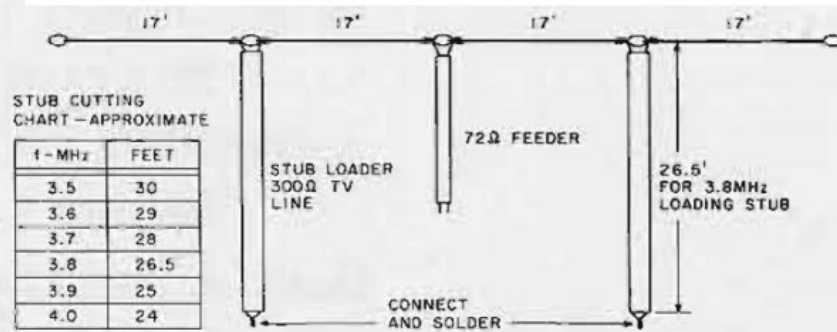
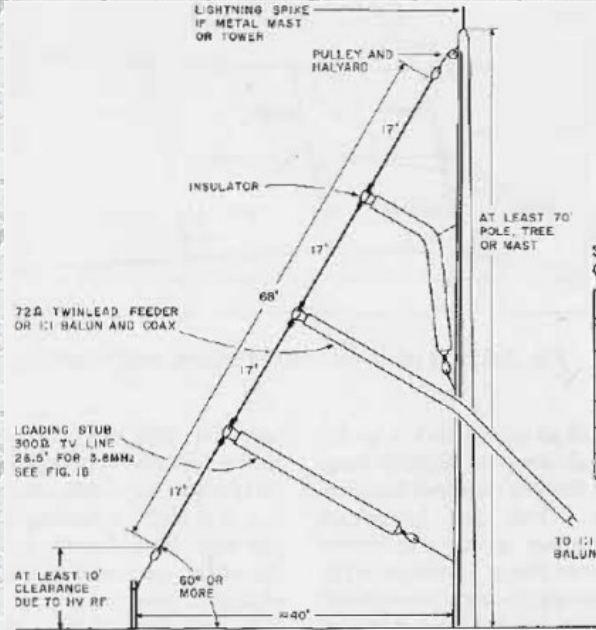
Half-power beamwidth of axial mode

<http://www.qsl.net/va3iul>

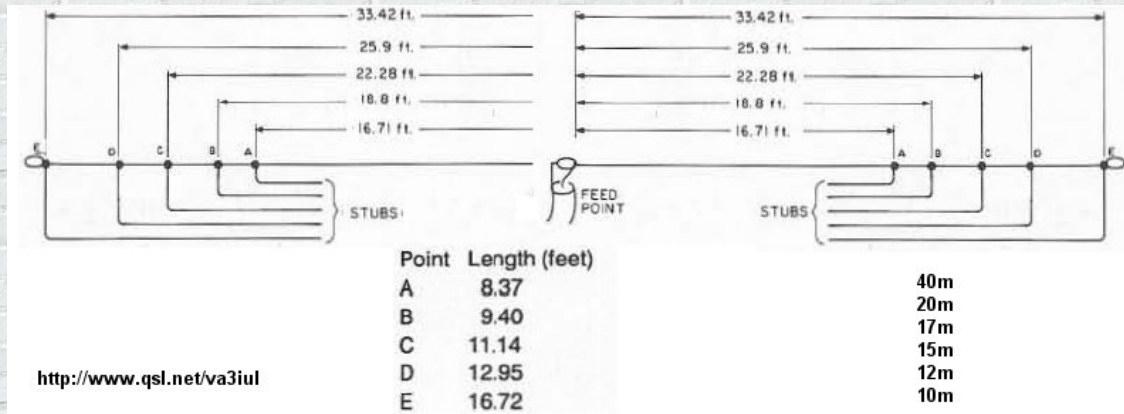
112 - Novice Vertical Antenna for 80m, 40m, 15m, 10m



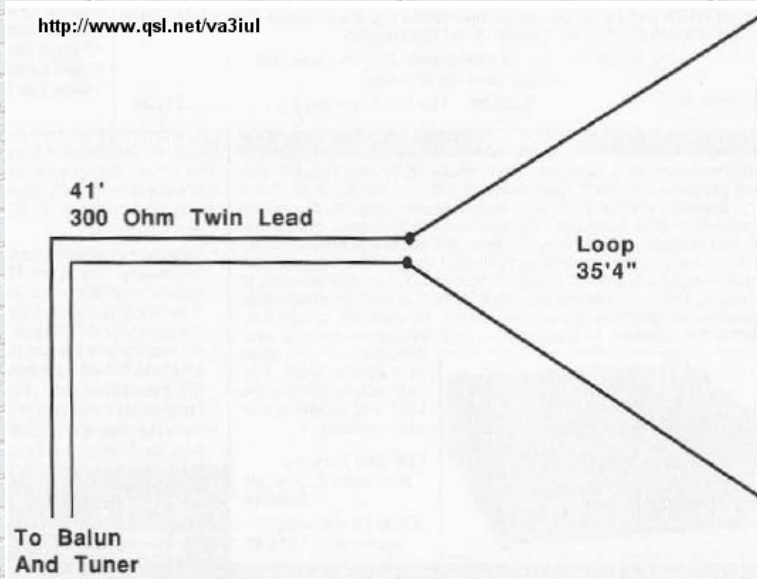
113 - Stub-Loaded Shortened Dipole for 80m



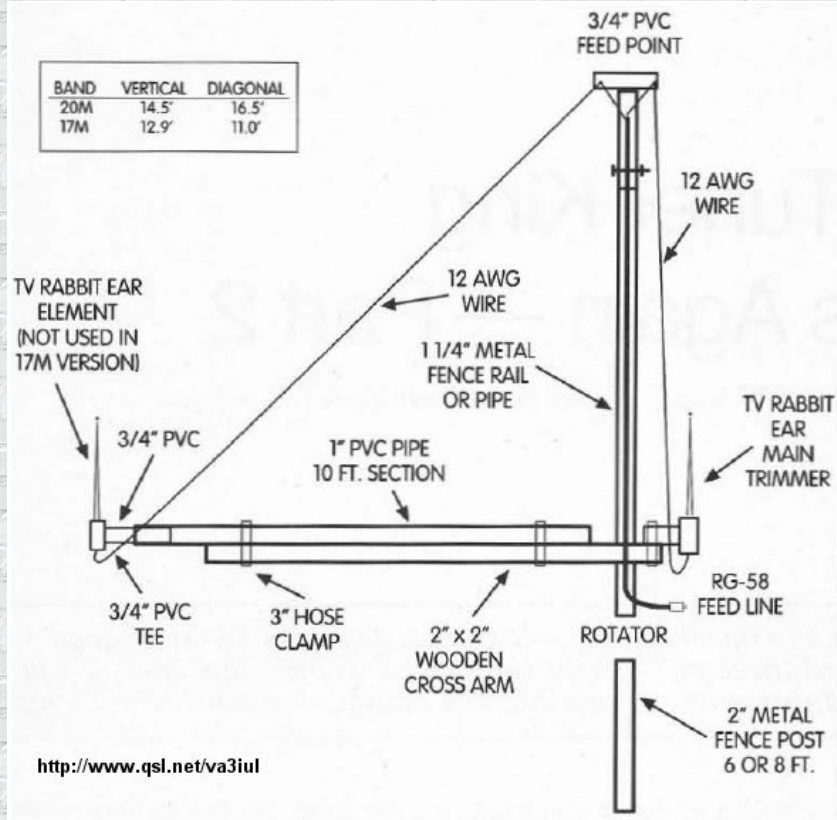
114 - Six-Band Wire-Stub Trap Antenna for 40m-10m



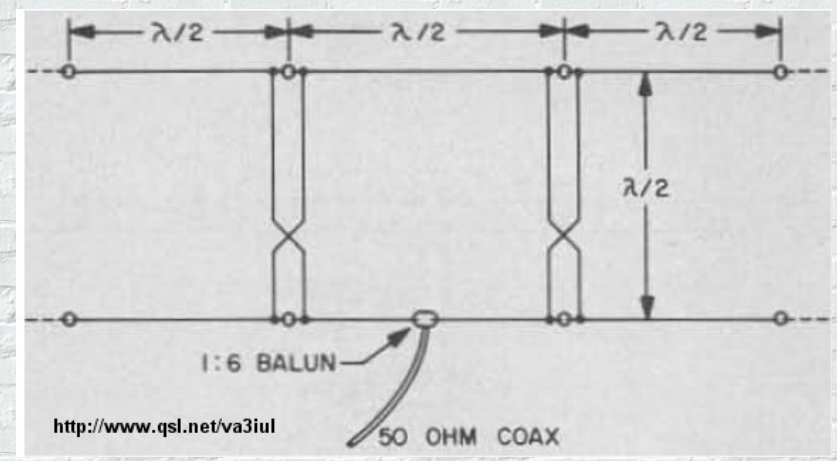
115 - Multiband Half-Wave Delta-Loop Antenna

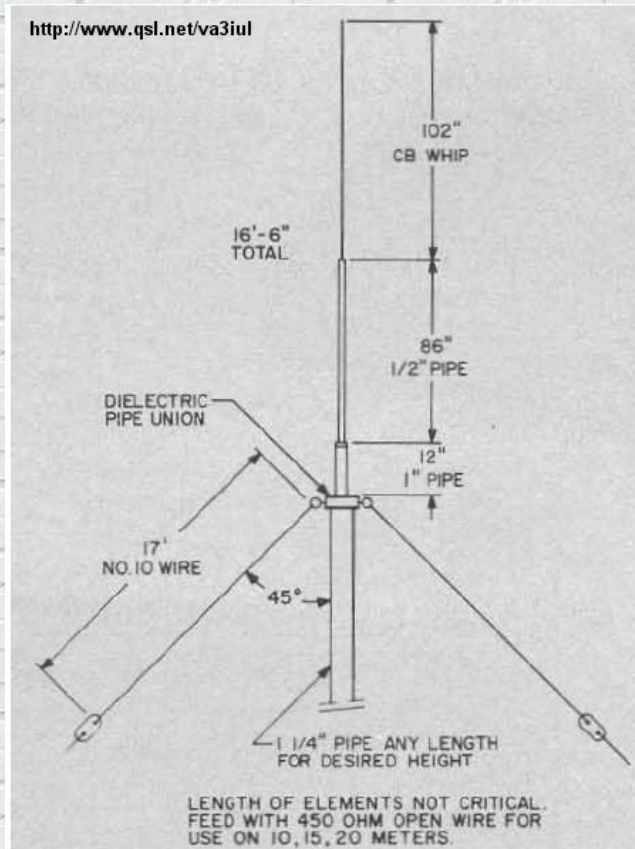


116 - Hybrid Vee for 20m, 17m



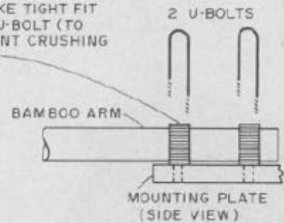
117 - Six-Shooter Array Antenna, Gain=7.5dB





119 - Wire Superbeam Antenna for 10m, 15m, 20m

WRAP 1/4" STRIPS CUT FROM OLD TIRE INNER TUBE & TAPE TO MAKE TIGHT FIT WITH U-BOLT (TO PREVENT CRUSHING POLE)

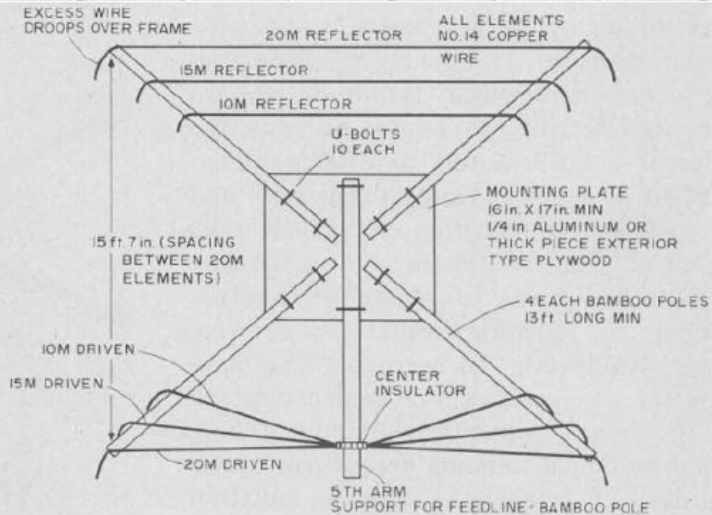


DETAIL 1 - HOW TO MOUNT BAMBOO SUPPORT ARMS

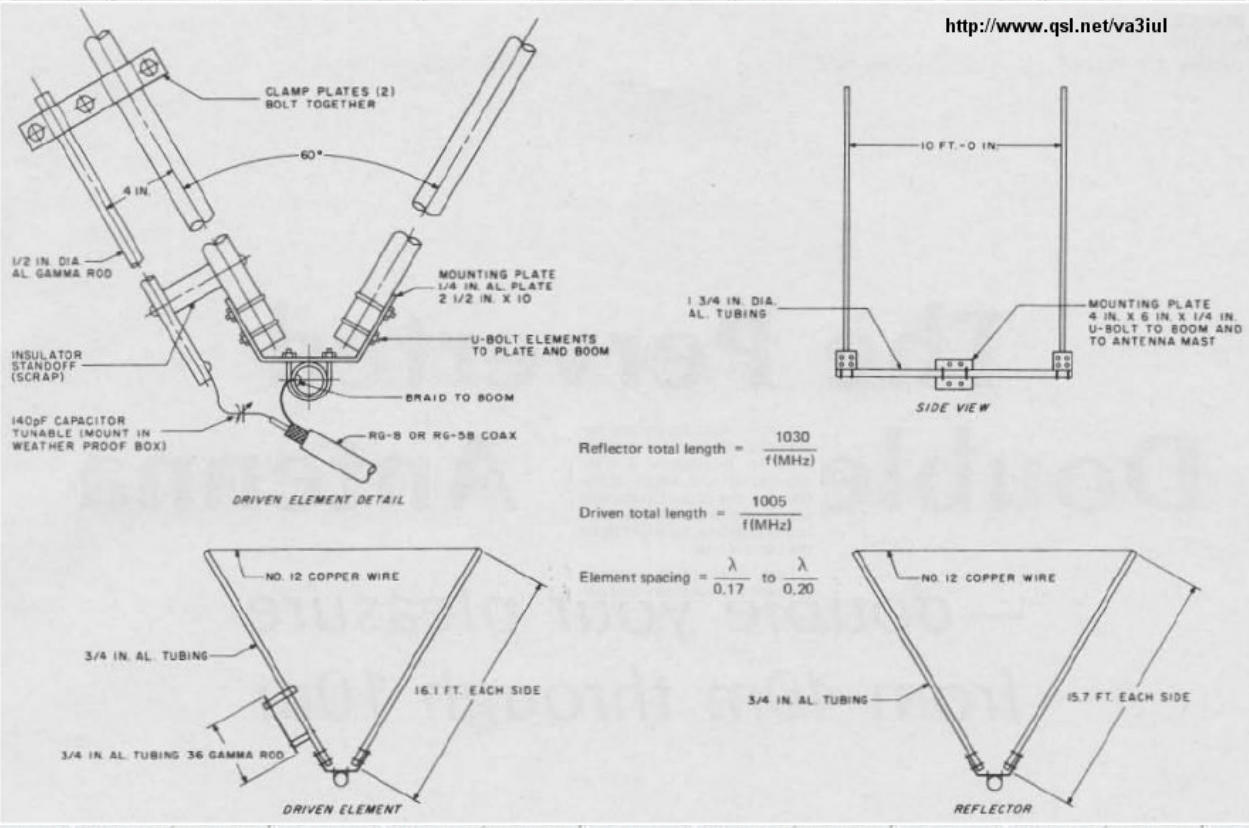
<http://www.qsl.net/va3iul>

BAND	SPACING	START WITH	
		DRIVEN	REFL
10M	7' 7"	16' 10"	17' 9"
15M	10' 3"	22' 6"	23' 9"
20M	15' 7"	33' 10"	35' 6"

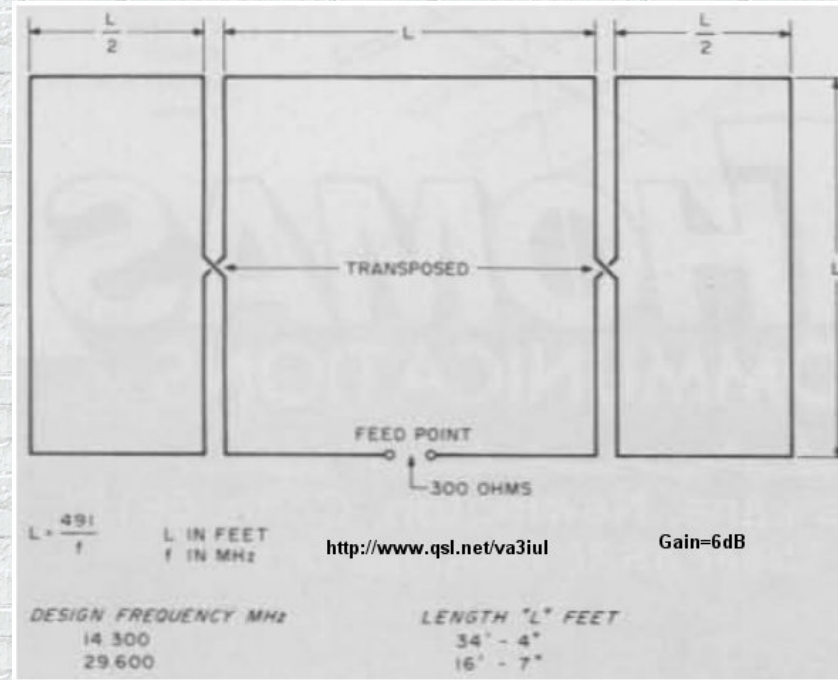
DIMENSIONS CHART



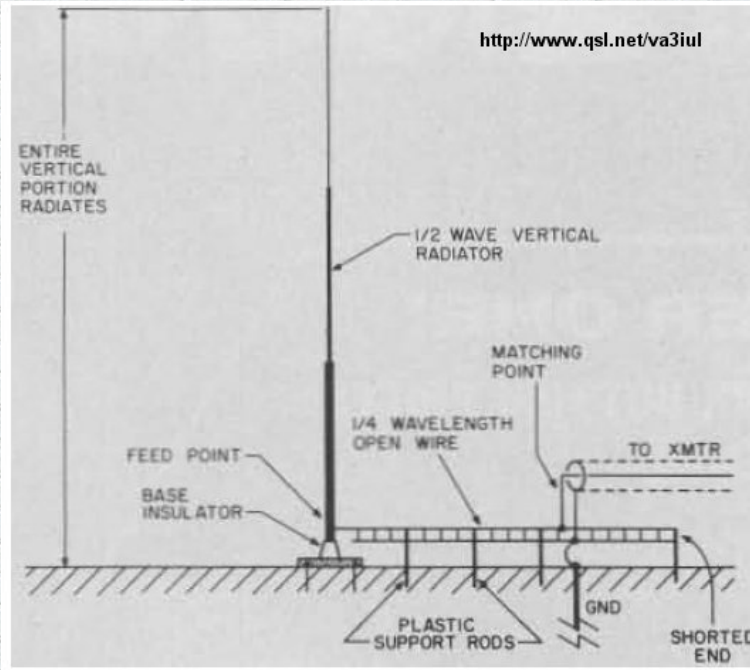
120 - Two Elements Delta-Loop Antenna



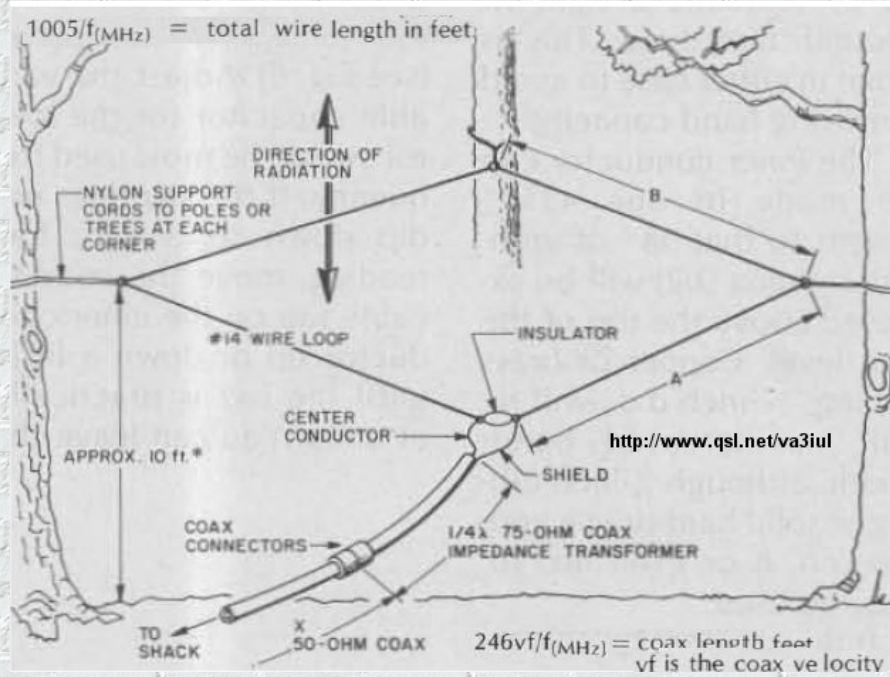
121 - Sterba Curtain Antenna



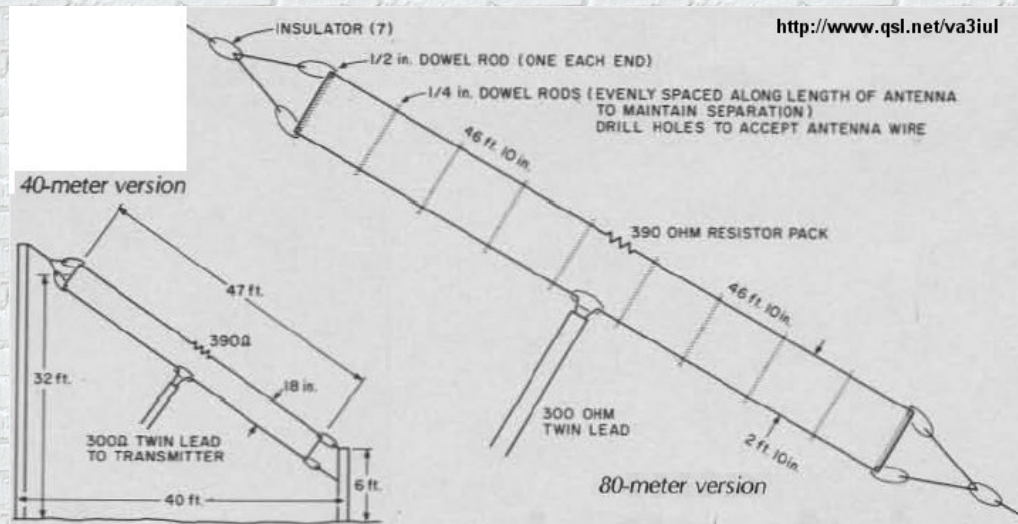
122 - Half-Wave Vertical Zepp Antenna



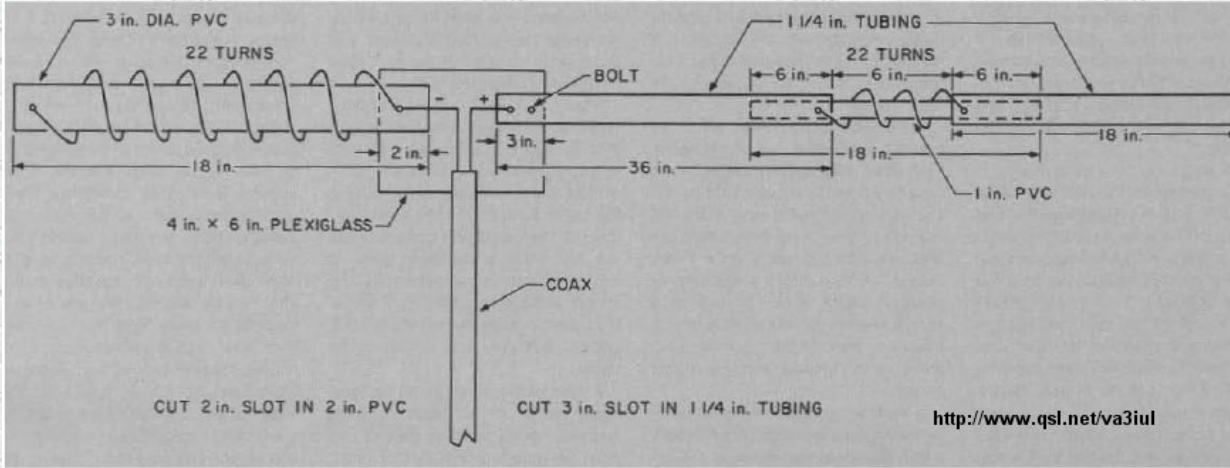
123 - Lazy-Loop Antenna for 40m



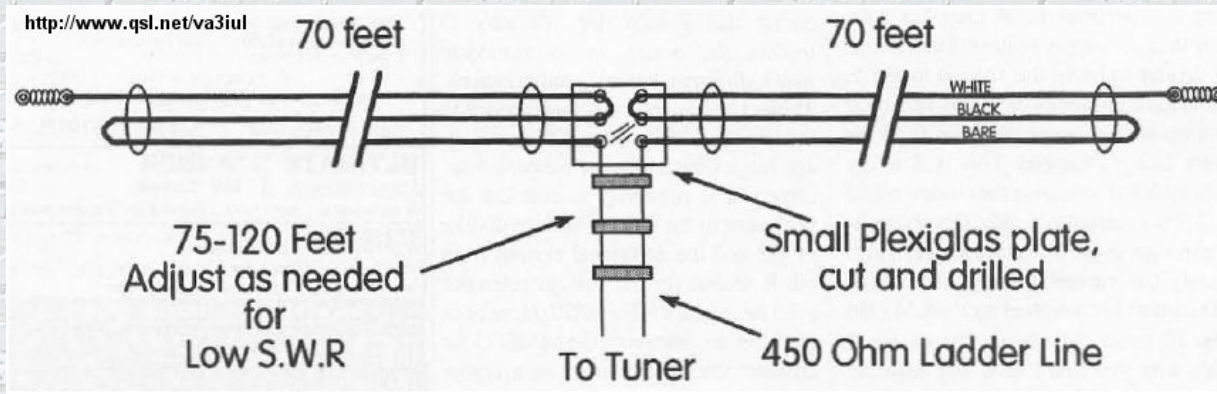
124 - Terminated Folded Dipole for 80m, 40m



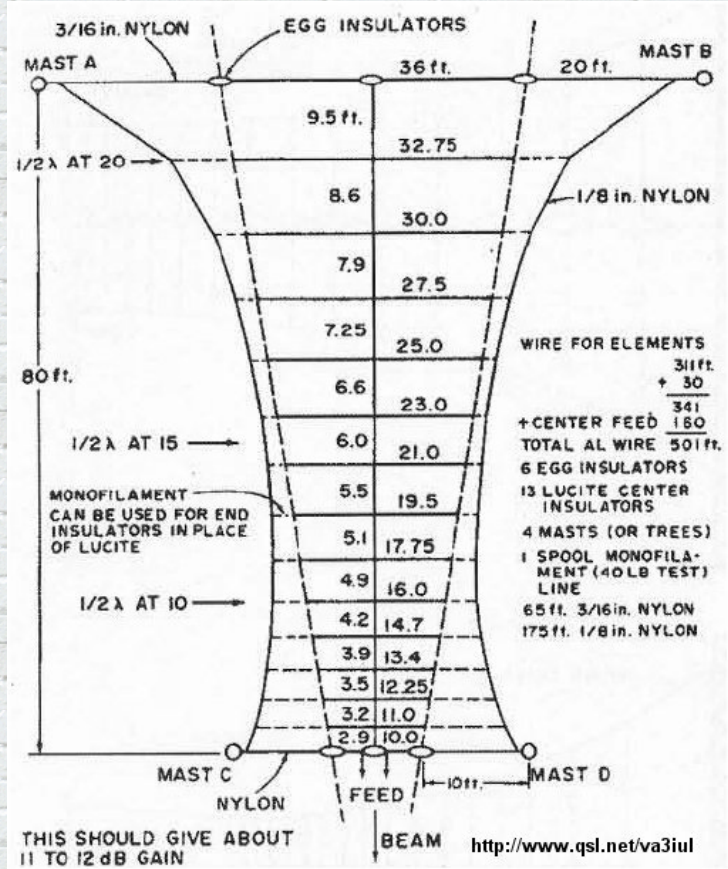
125 - Short-Fat Antenna for 15m



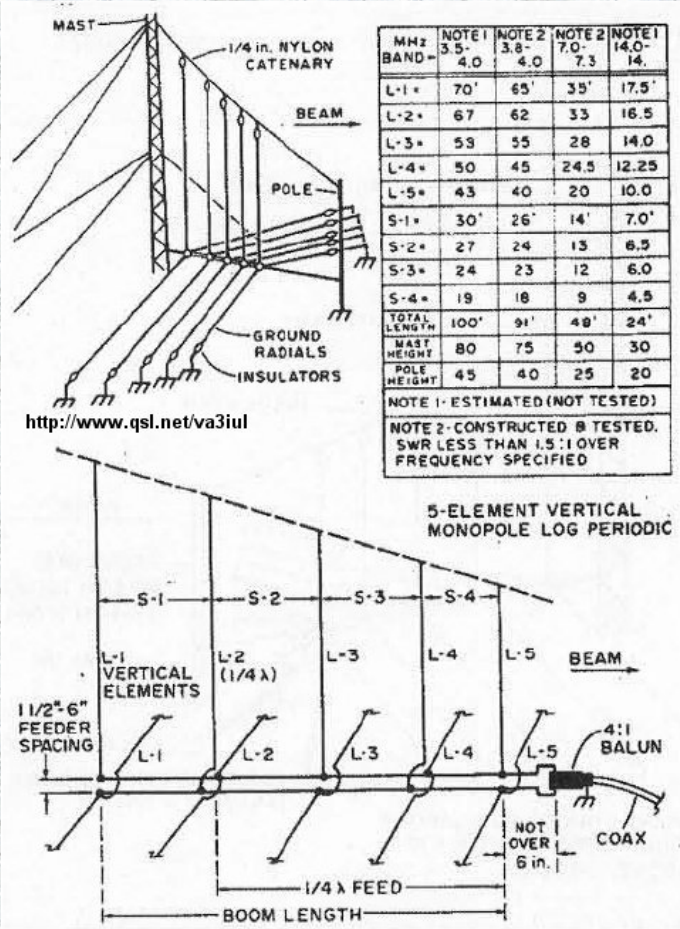
126 - Cobra Antenna for 80m



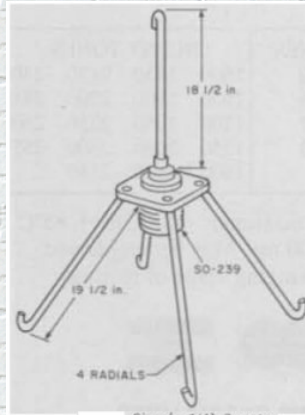
127 - Log-Periodic Wire Antenna for 20m, 15m, 10m



128 - 5-Element Log-Periodic Vertical Antenna for 80m, 40m, 20m

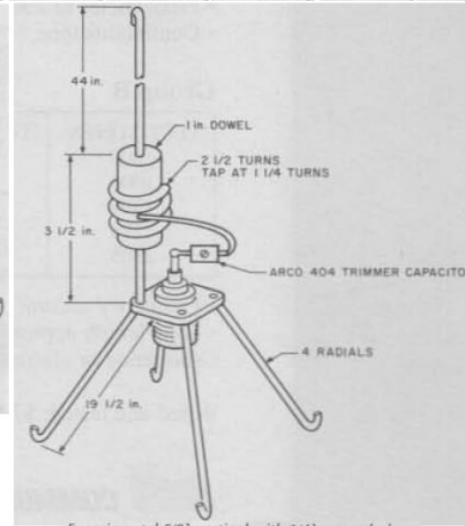


129 - 2m Vertical Wire Antennas



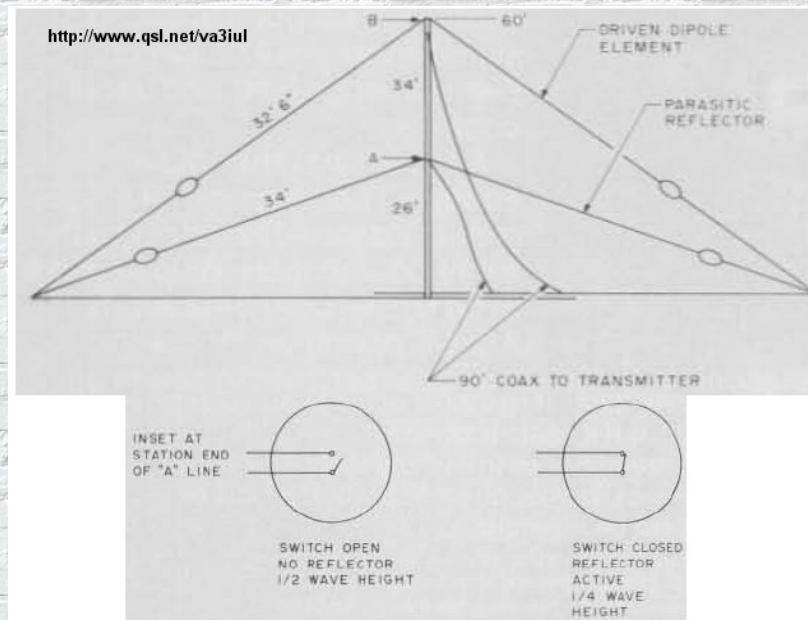
Simple $1/4\lambda$ 2-meter ground-plane antenna.

<http://www.qsl.net/va3iul>

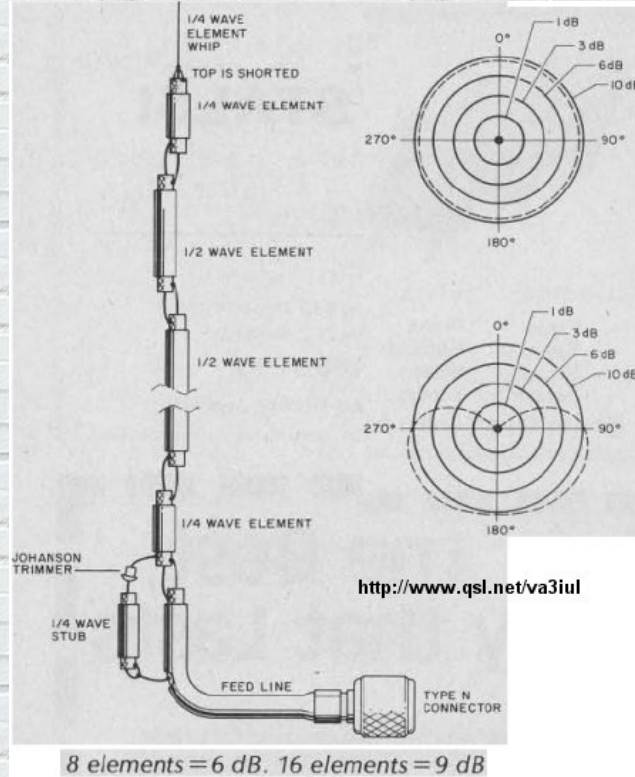


Experimental $5/8\lambda$ vertical with $1/4\lambda$ ground plane.

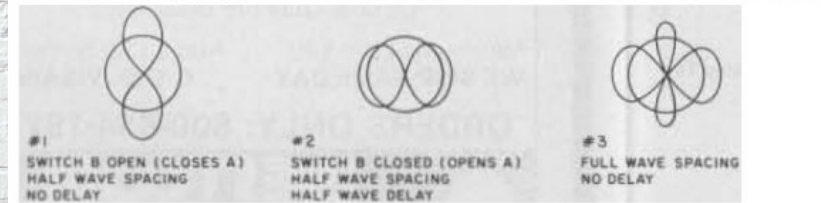
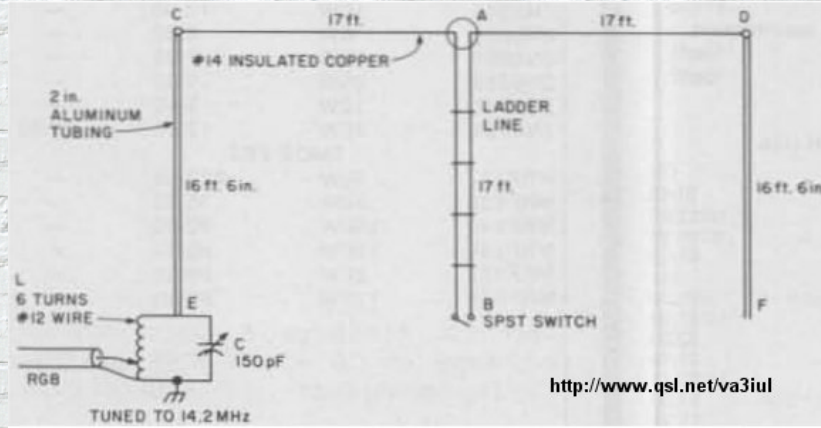
130 - Earth-Mover Inverted-V Antenna for 40m



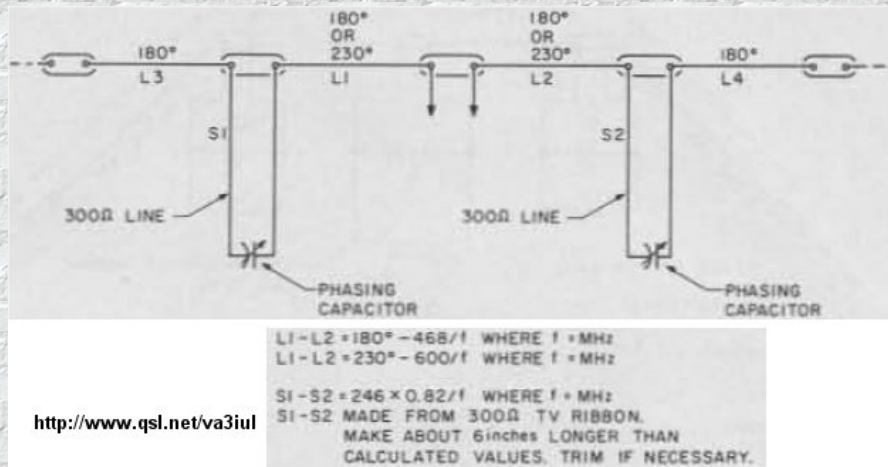
131 - Coax-Cable Collinear Antennas



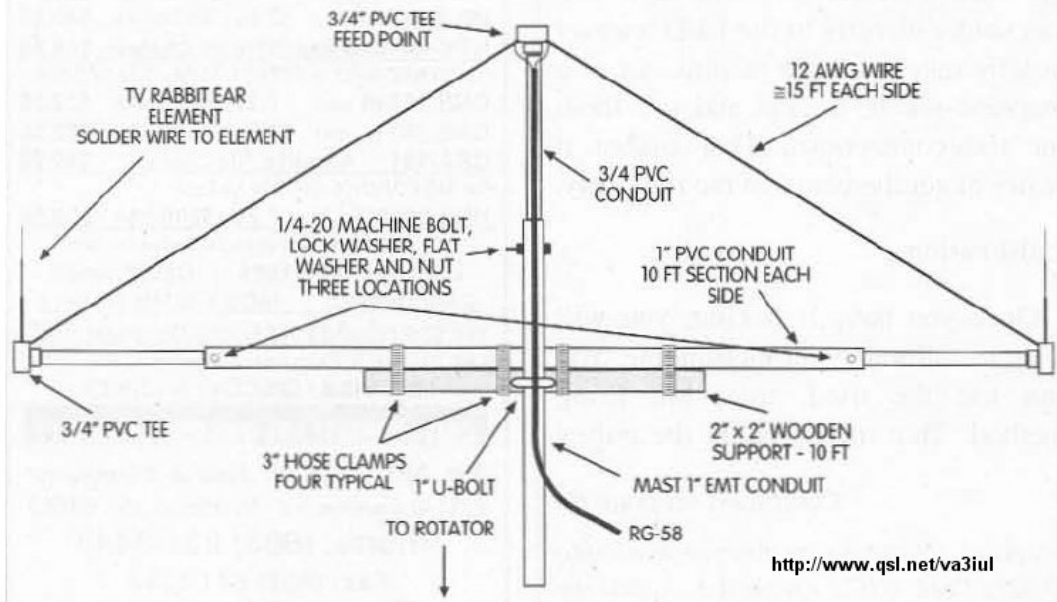
132 - Double Bobtail Antenna for 20m



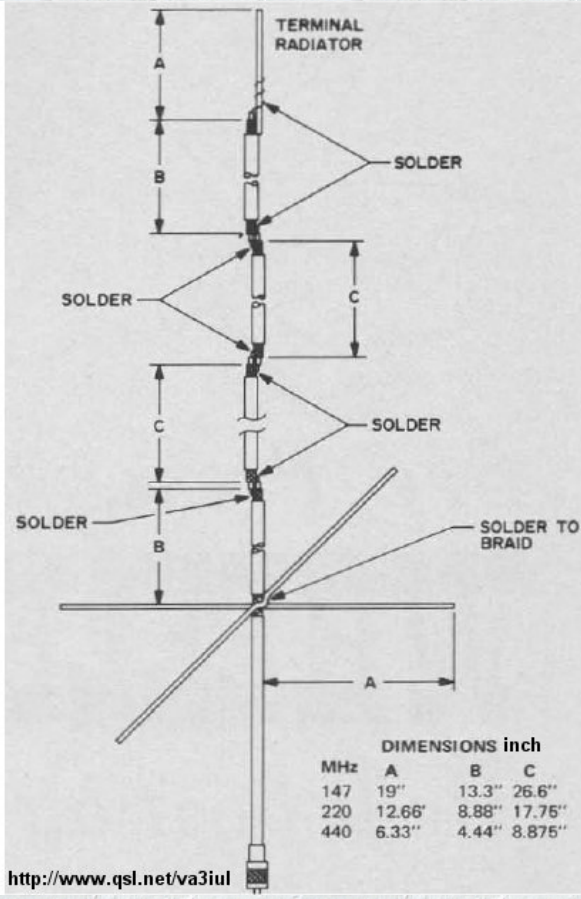
133 - Collinear Zepp Antenna



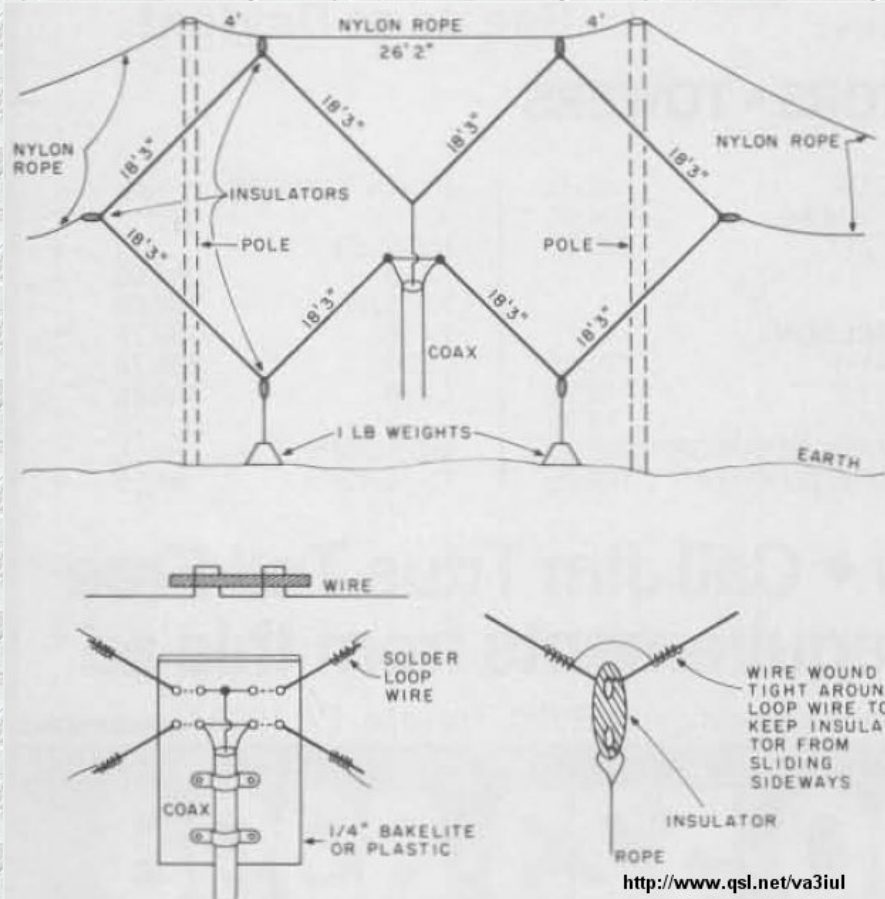
134 - Taylor Vee Antenna for 20m



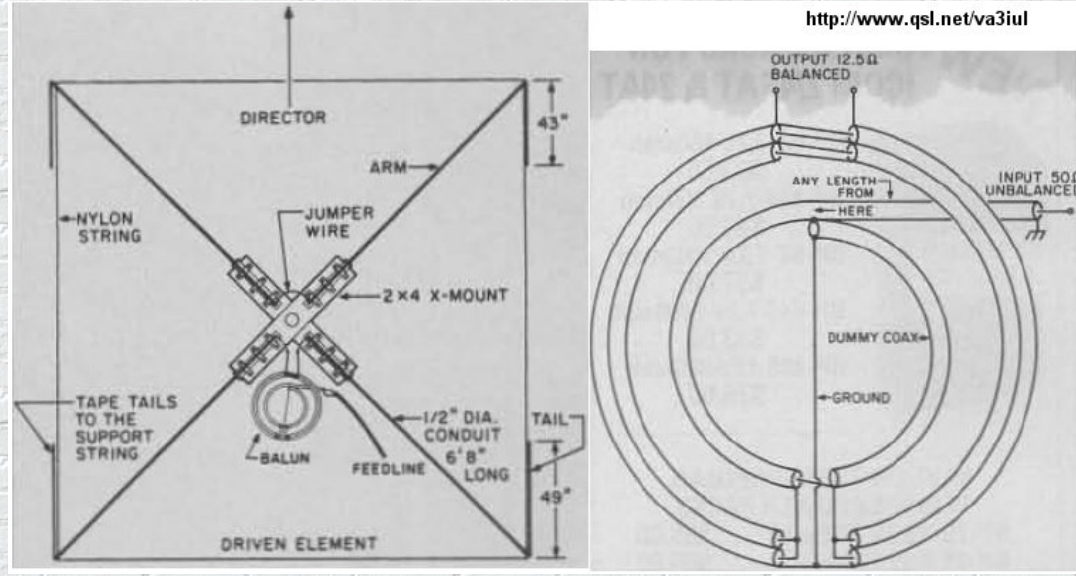
135 - Collinear Vertical Antenna 6dB-Gain for 2m, 1.3m, 73cm



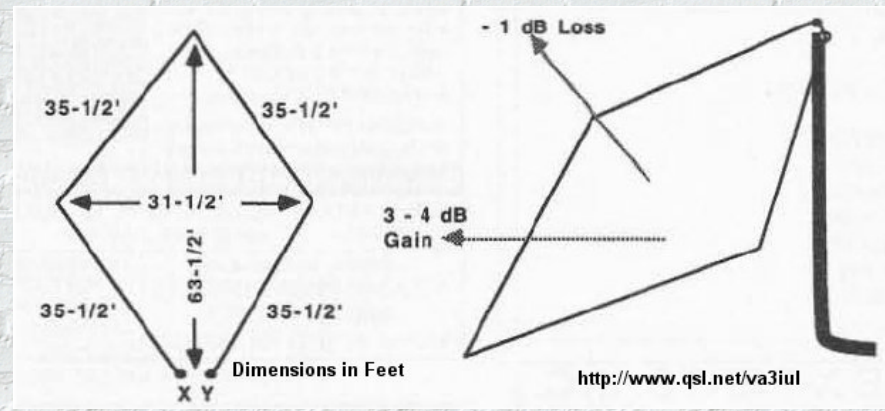
136 - Bi-Loop Antenna for 20m



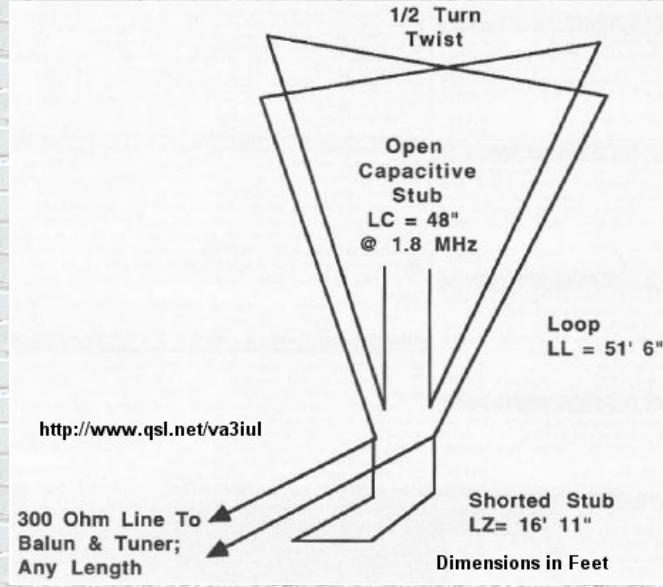
137 - Wire Beam 6dBd-Gain for 10m



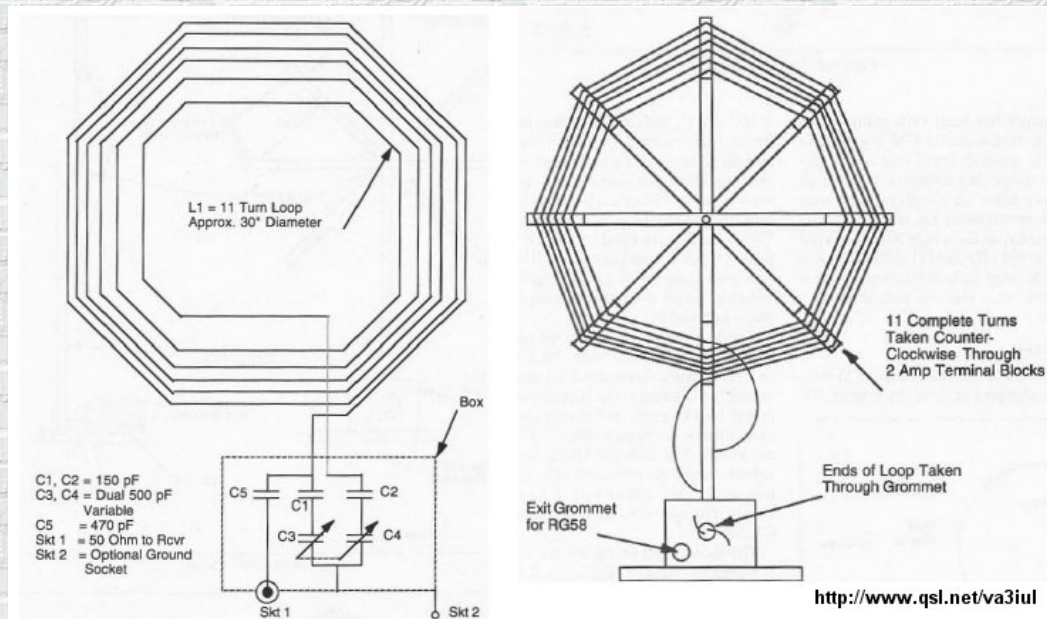
138 - Sloping Diamond Antenna 4dB-Gain for 40m



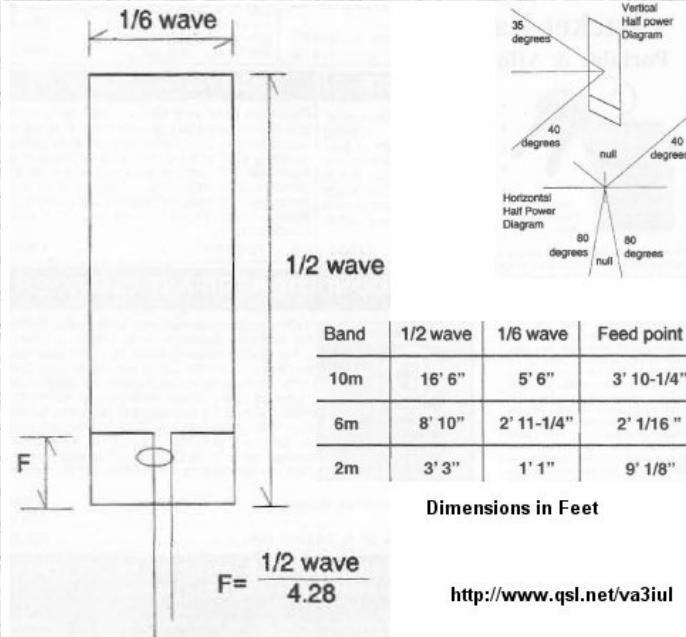
139 - Twisted Loop Antenna for 160m



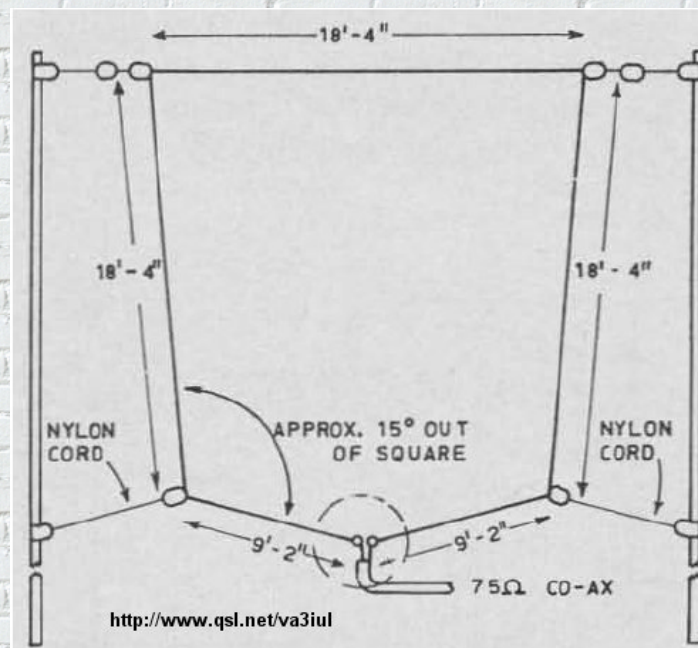
140 - DX RX Loop Antenna for 160m



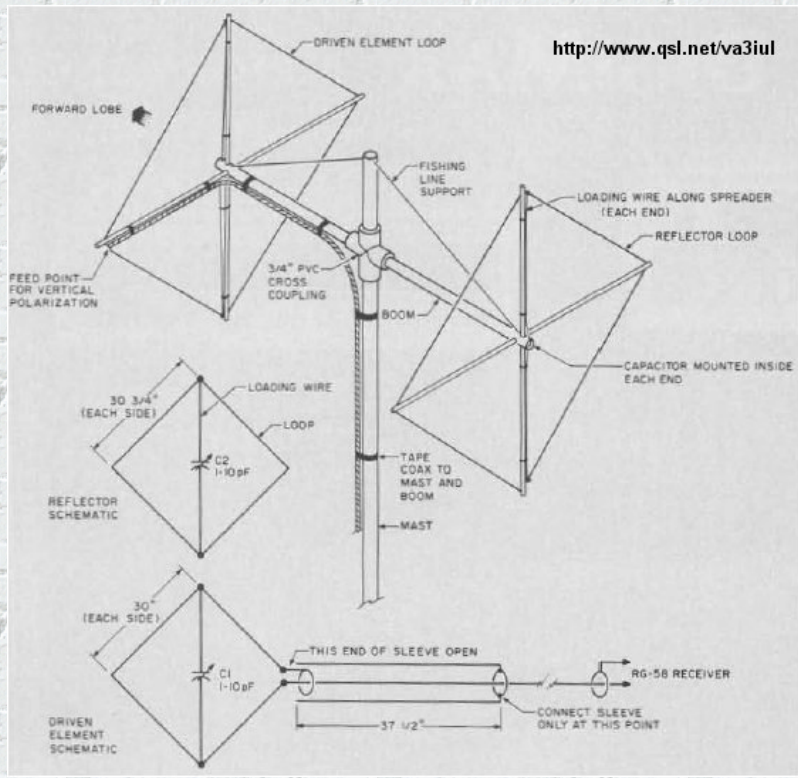
141 - Hentenna 3dB-Gain for 10m, 6m, 2m



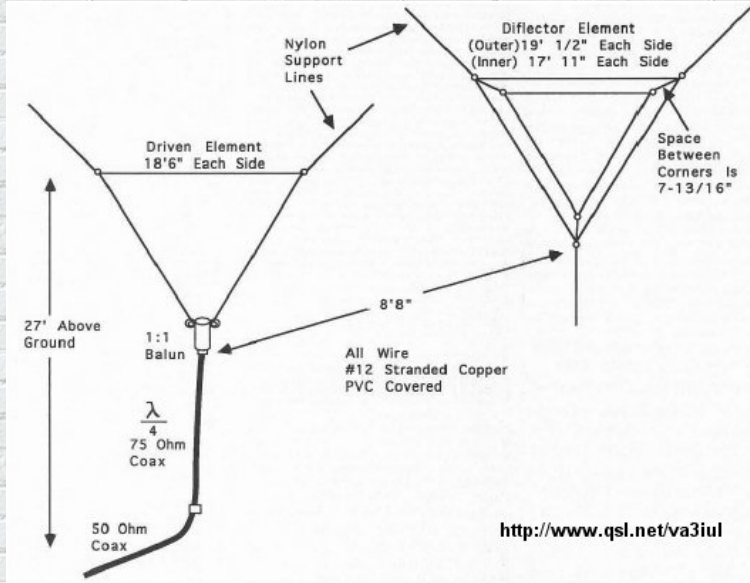
142 - VK2AAR Wire Antenna for 20m



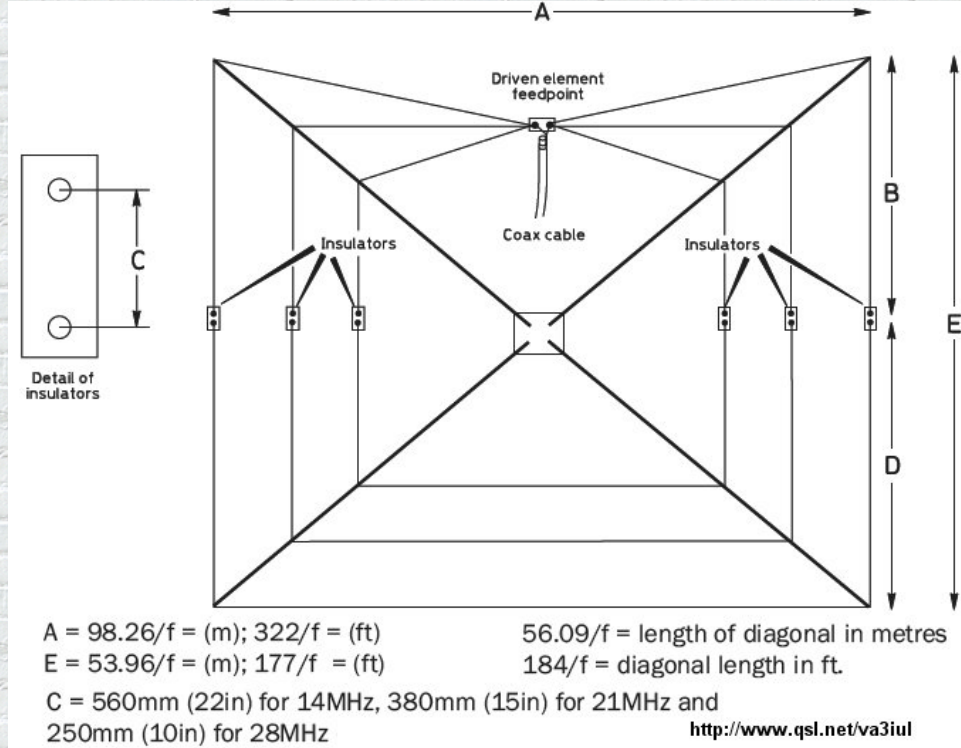
143 - 2-Elements Quad Antenna for 6m



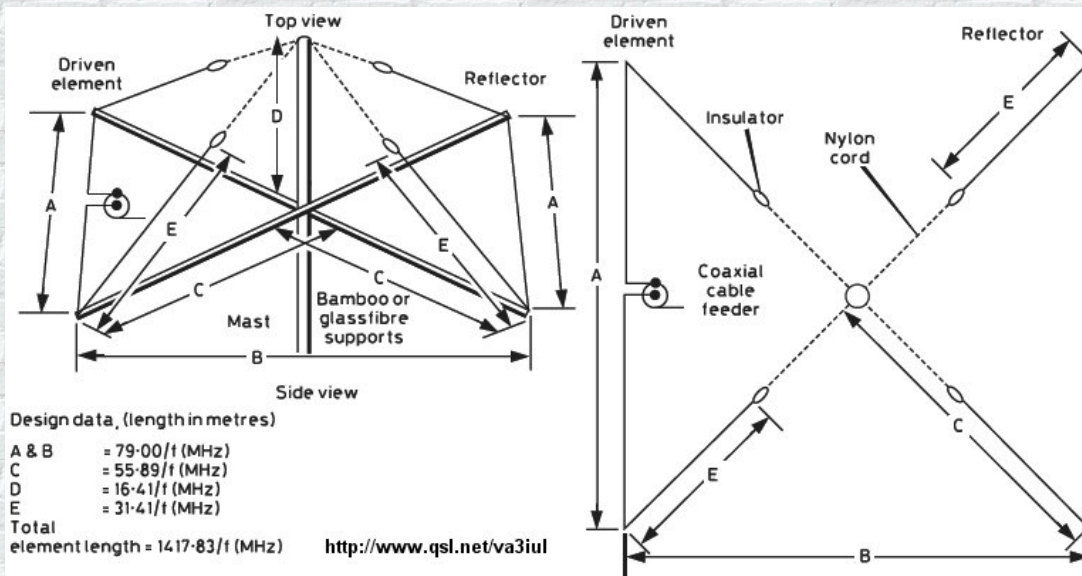
144 - Hula-Loop Bidirectional 6dB-Gain Antenna for 17m



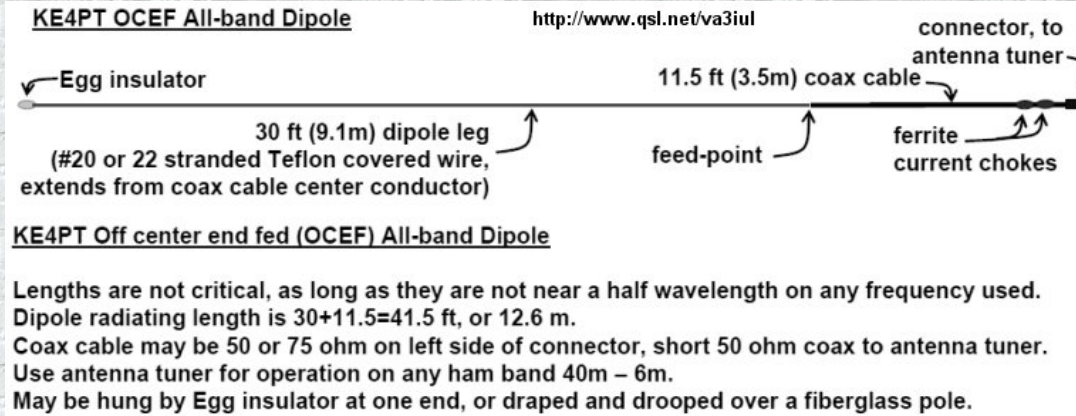
145 - Moxon Rectangle Beam for 15m-10m



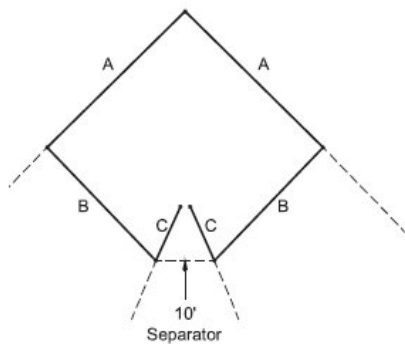
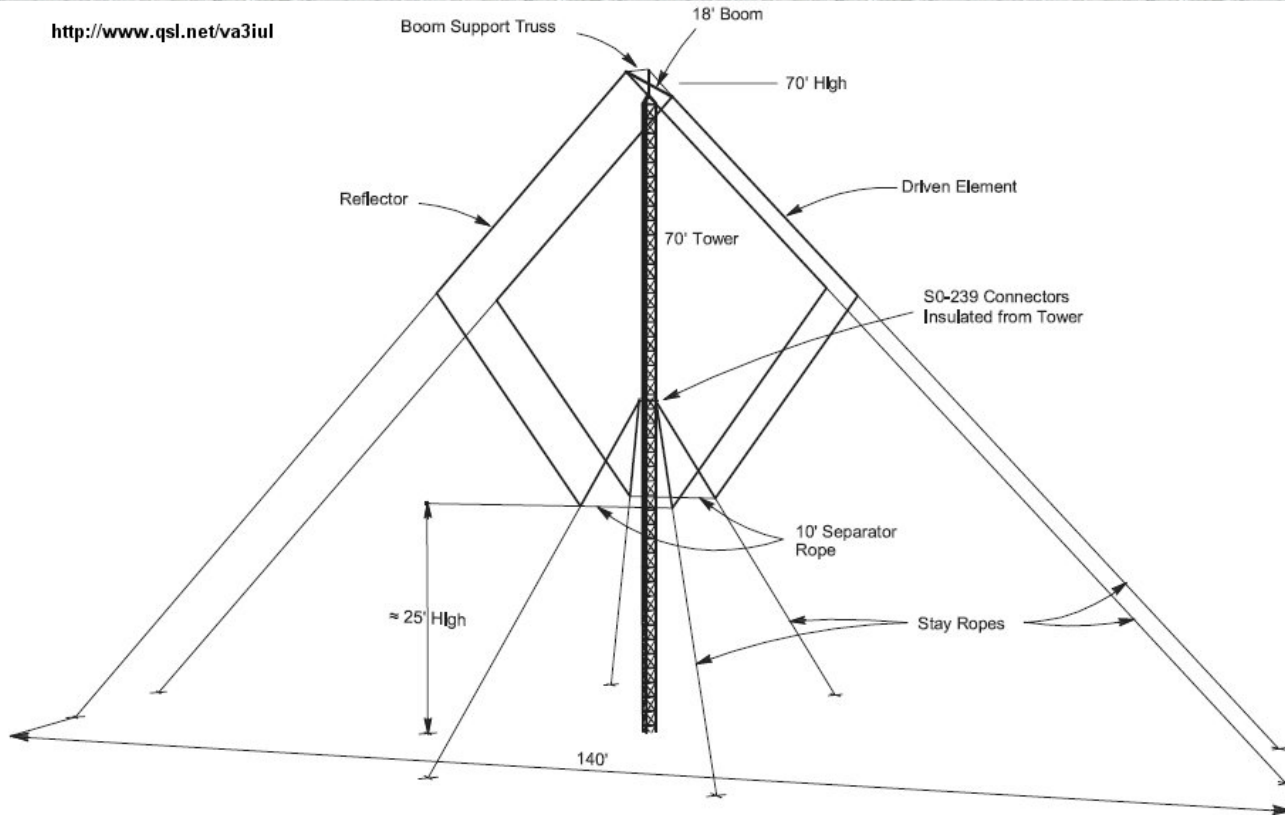
146 - Double-D Beam 4dB-Gain



147 - KE4PT OCEF All-Band Dipole

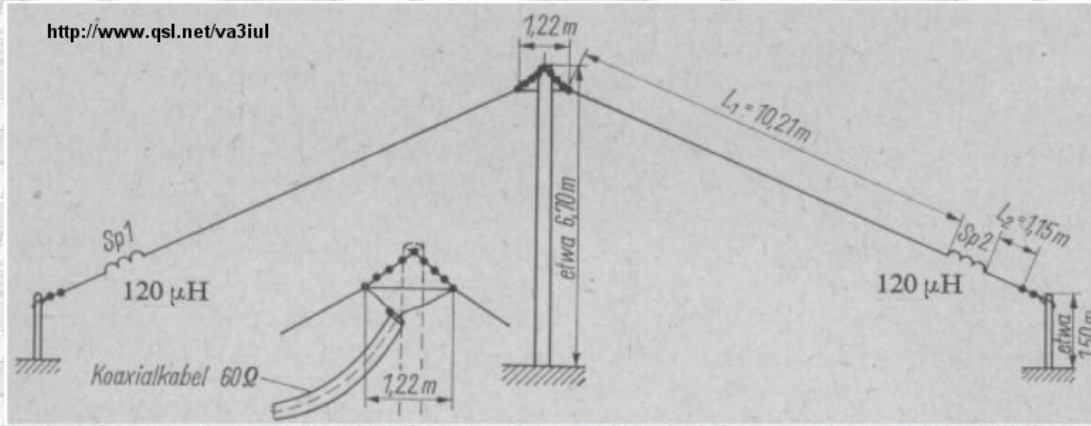


148 - Wire Quad Antenna for 40m

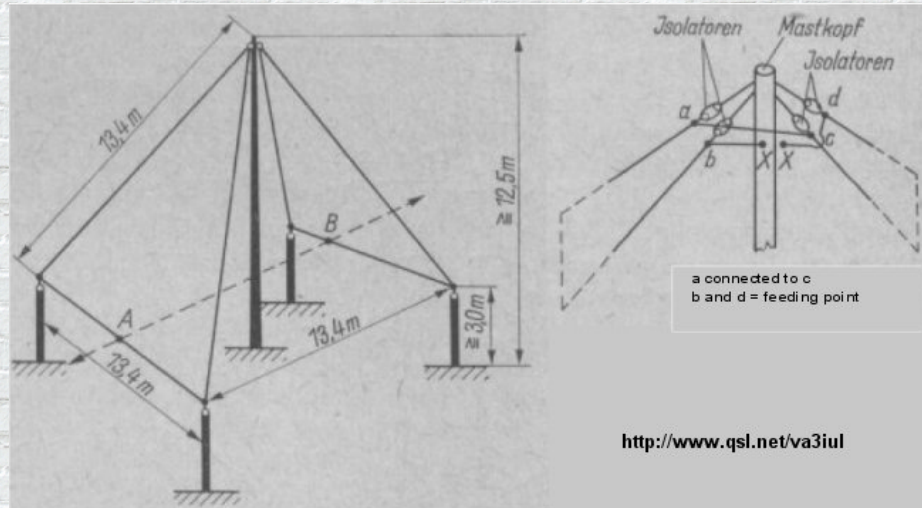


	7050 kHz, CW	7200 kHz, SSB
Length A, Reflector	31"6"	30"10-3/4"
Length B, Reflector	28"2-1/4"	27"7"
Length C, Reflector	15"7-1/4"	15"
Total, Half Reflector	75"3-1/2"	73"5-3/4"
Resonant Frequency	7030 kHz	7205 kHz
Length A, Driven	30"7-1/4"	30"
Length B, Driven	27"3-1/2"	26"8-1/2"
Length C, Driven	14"7-1/2"	14"
Length, Half Driven	72"6-1/4"	70"8-1/2"
Self-Resonant Frequency	7295 kHz	7480 kHz

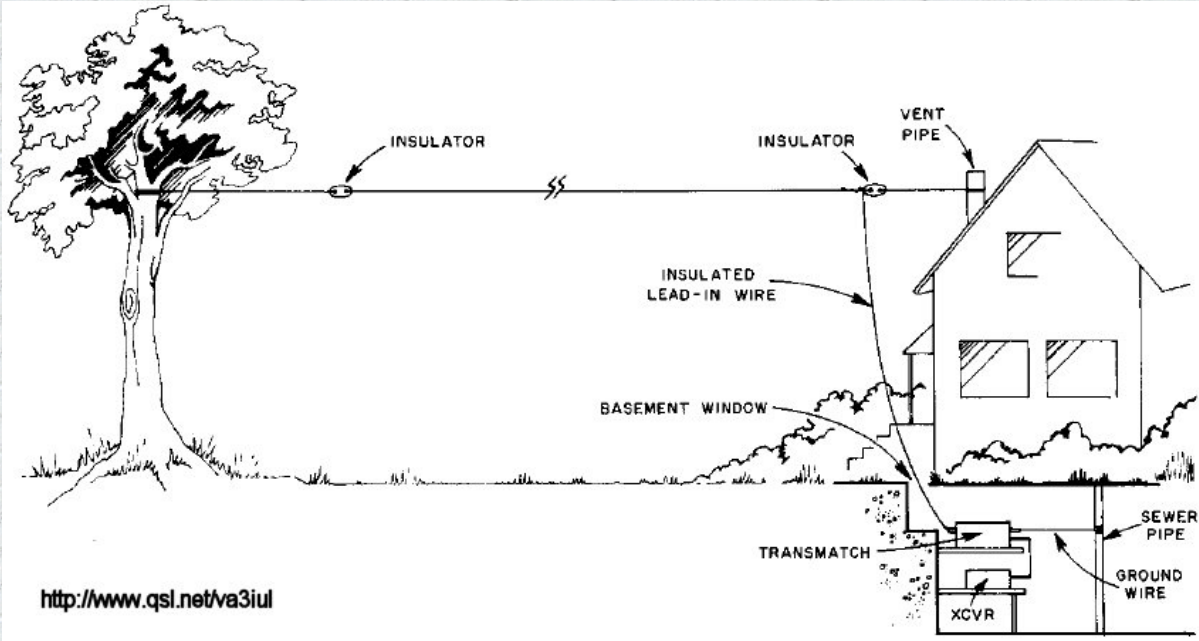
149 - Inclined Dipole Antenna for 80m, 40m



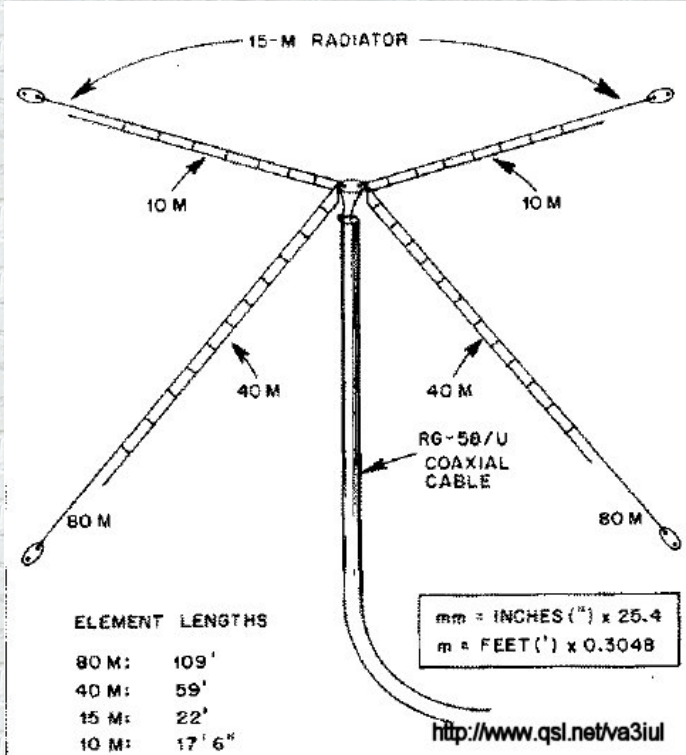
150 - Pyramidal Wire Antenna for 80m



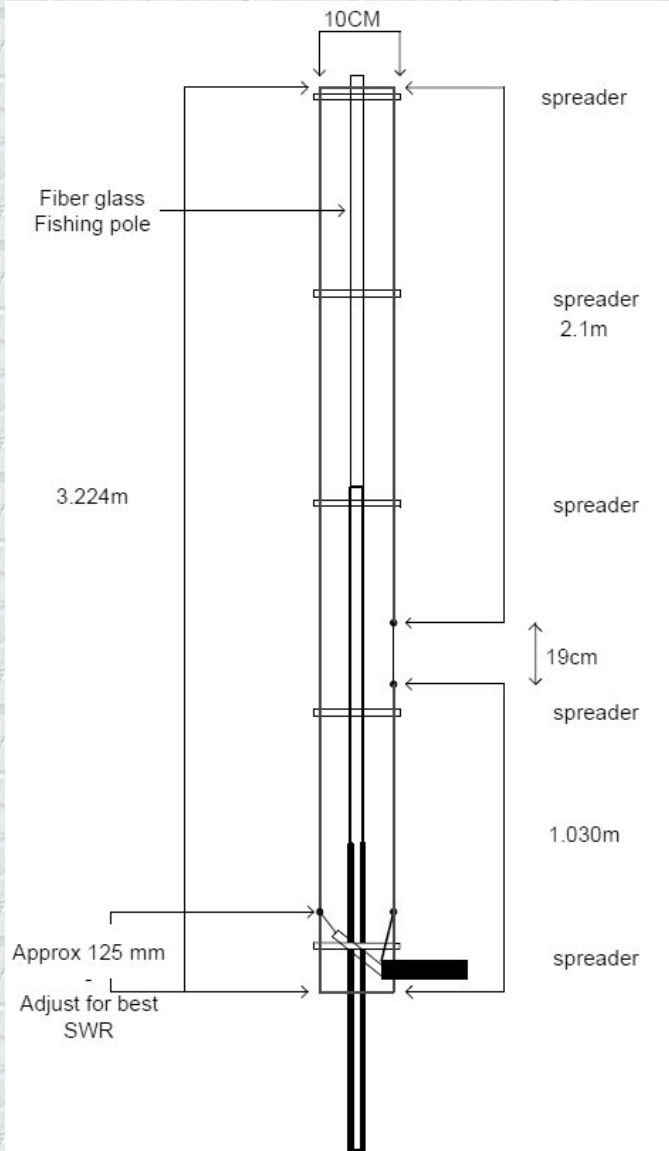
151 - Random Wire Antenna All Bands



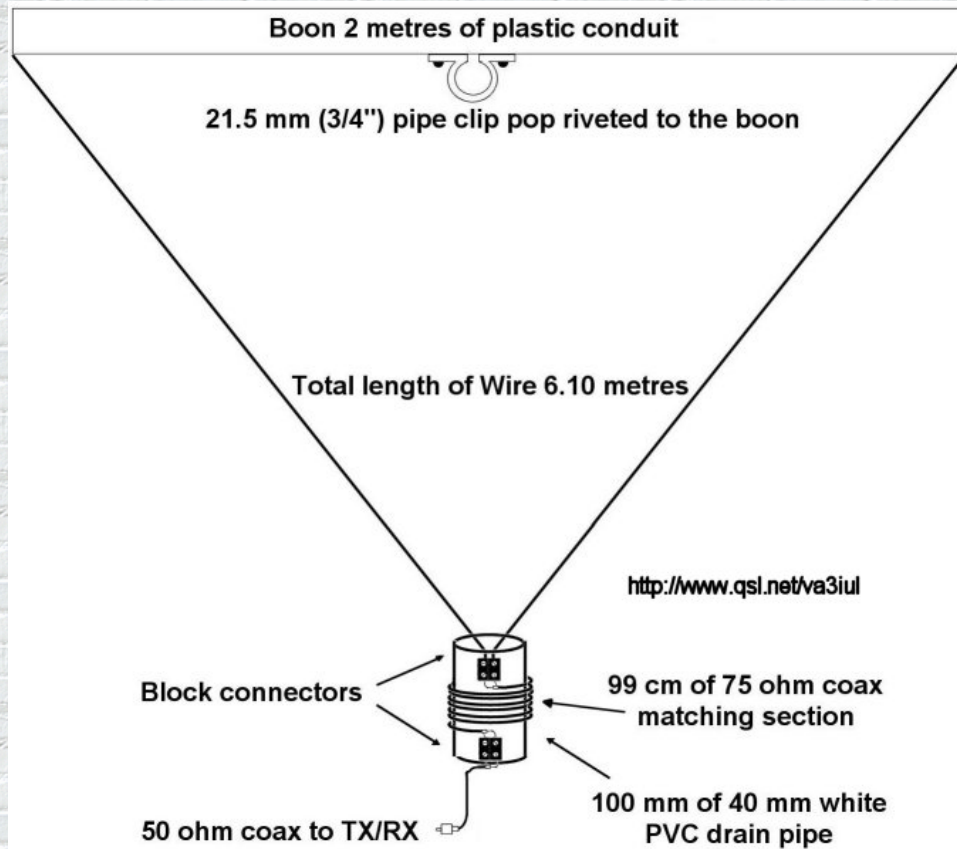
152 - Multiband Dipole Antenna for 80m, 40m, 15m, 10m



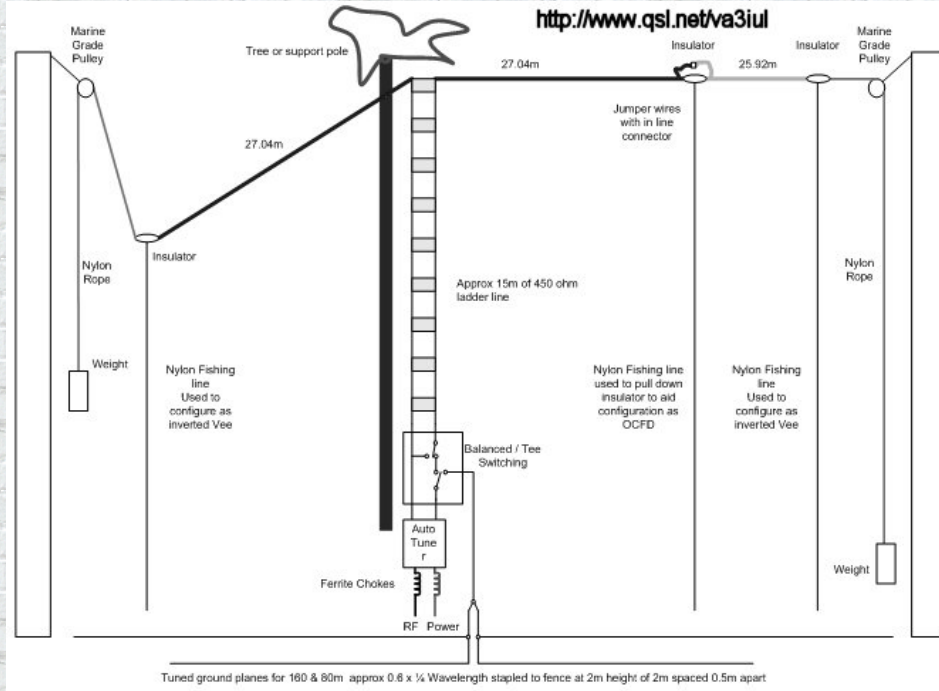
153 - Slim Jim Wire Antenna for 4m



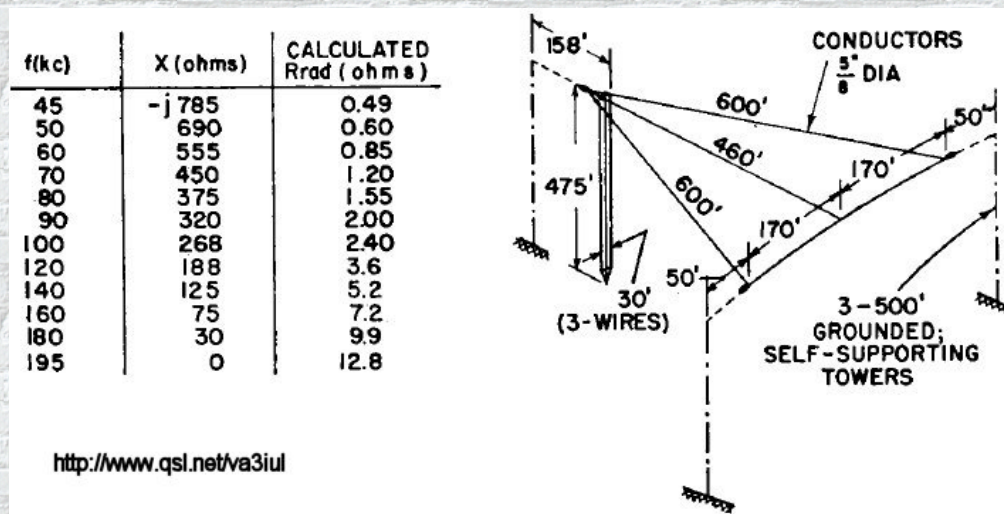
154 - Delta Loop for 6m

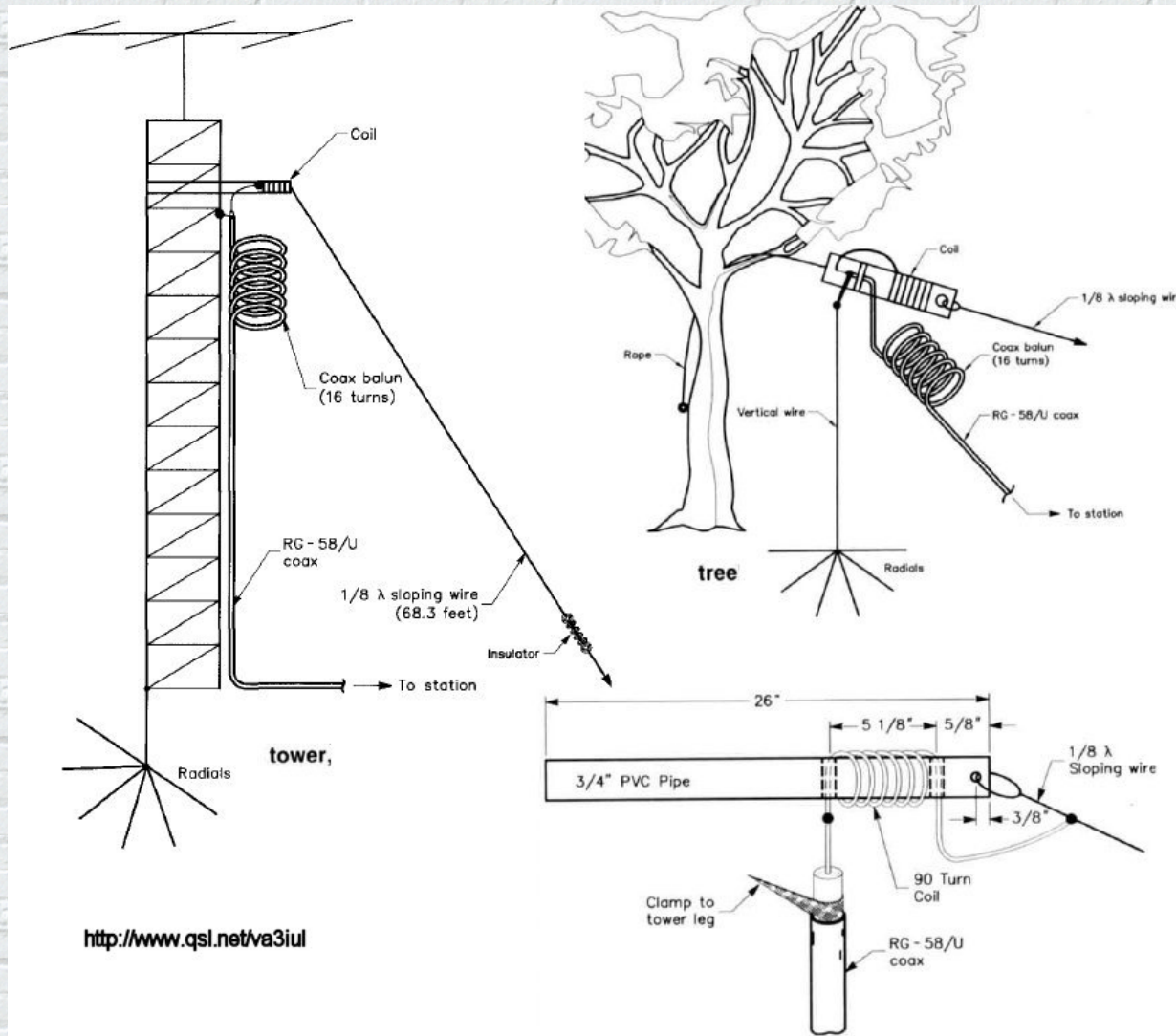


155 - Re-Configurable Antenna for 160m and 80m

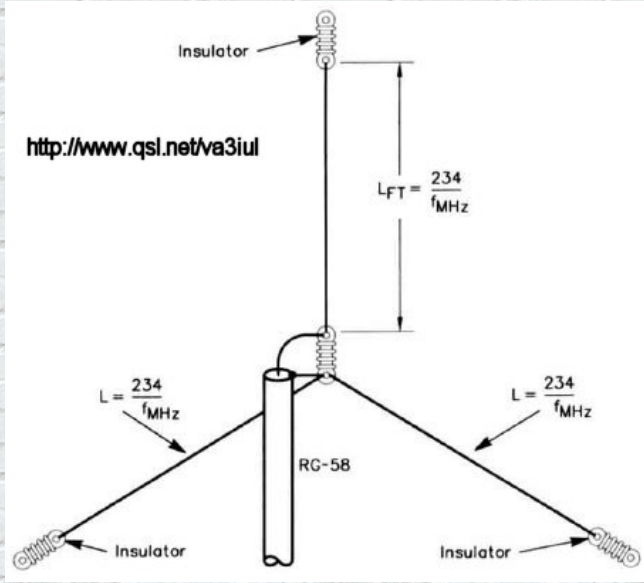


156 - Very Low Frequency Inverted-L Antenna

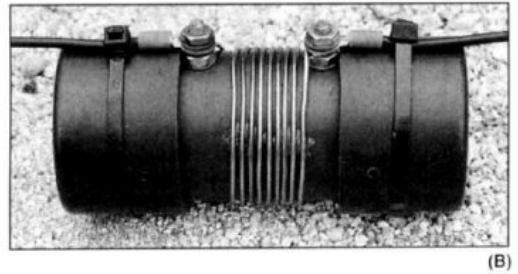
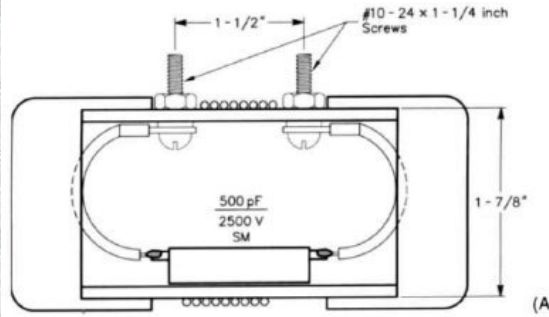
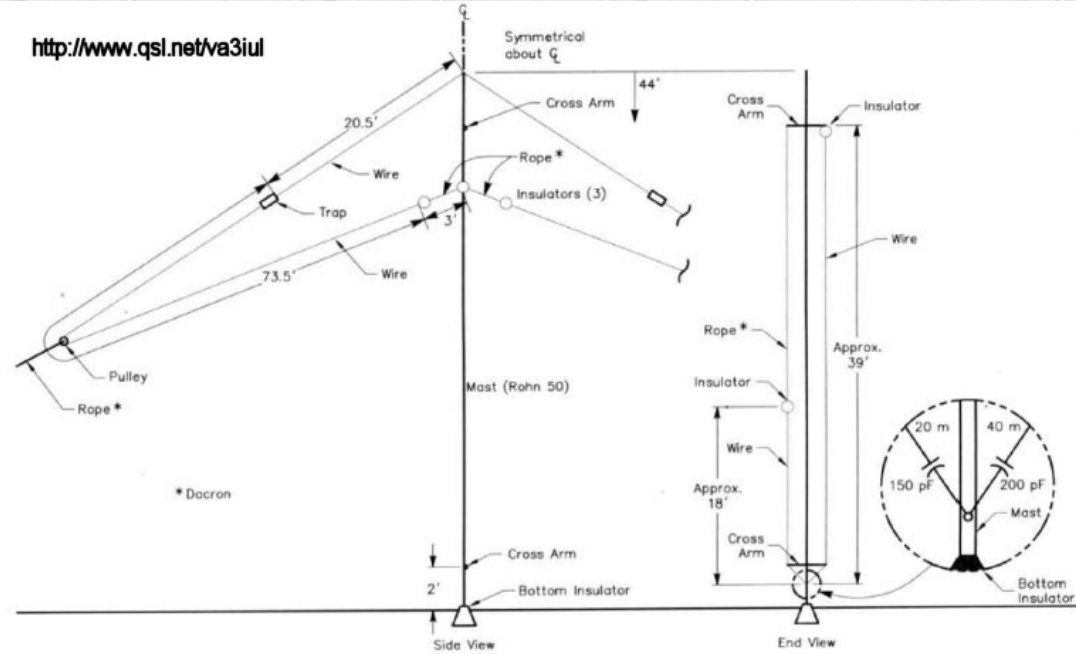




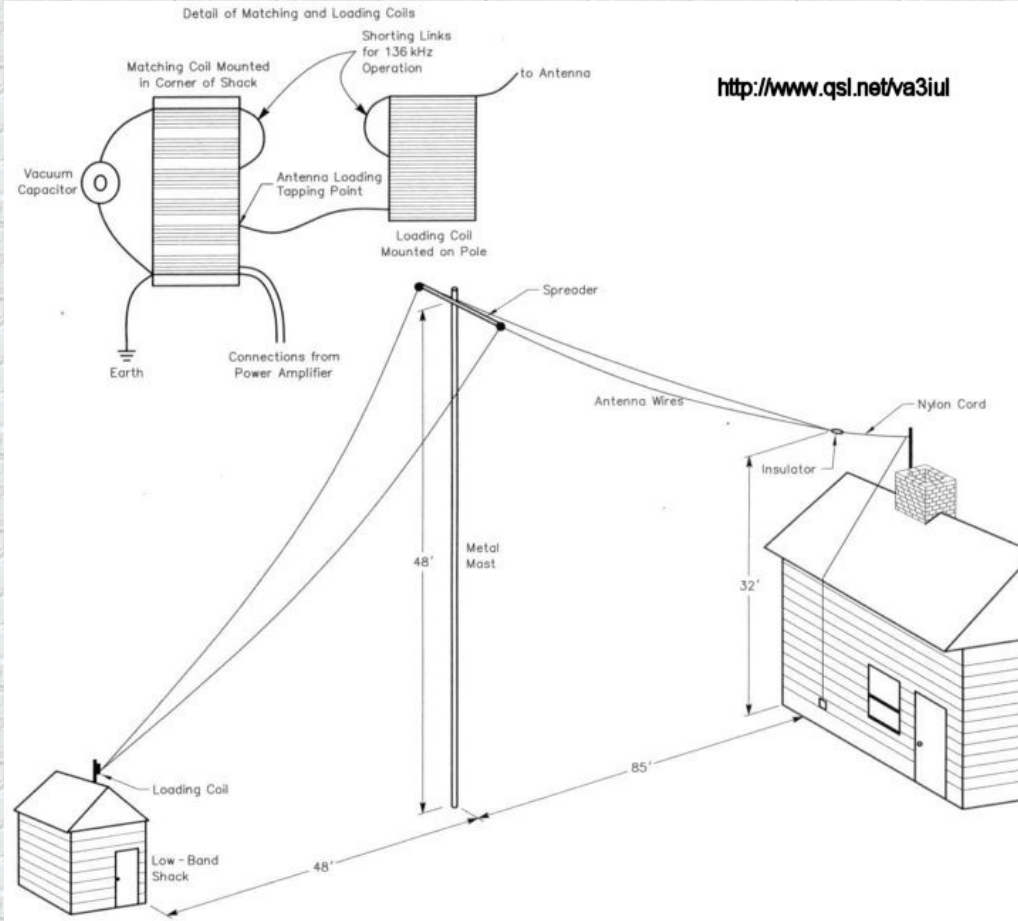
<http://www.qsl.net/va3iul>



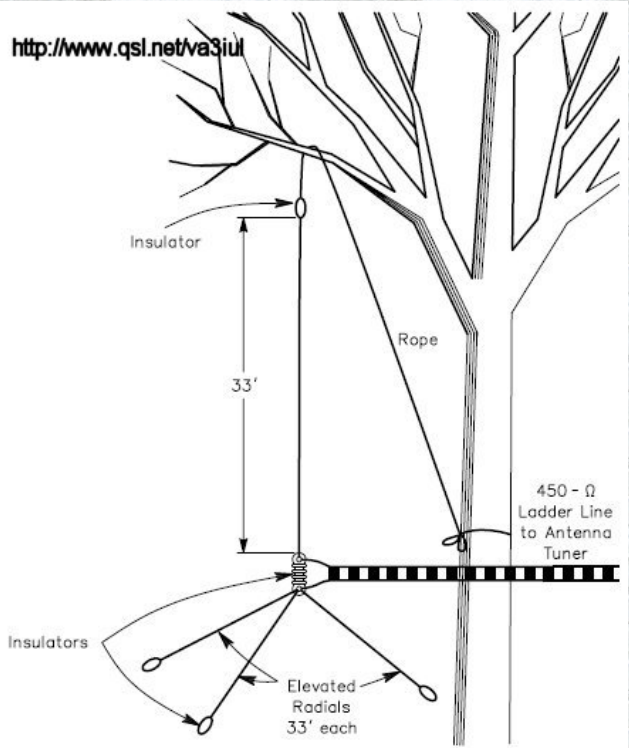
159 - Multiband Vertical Antenna for 80m, 40m, 20m



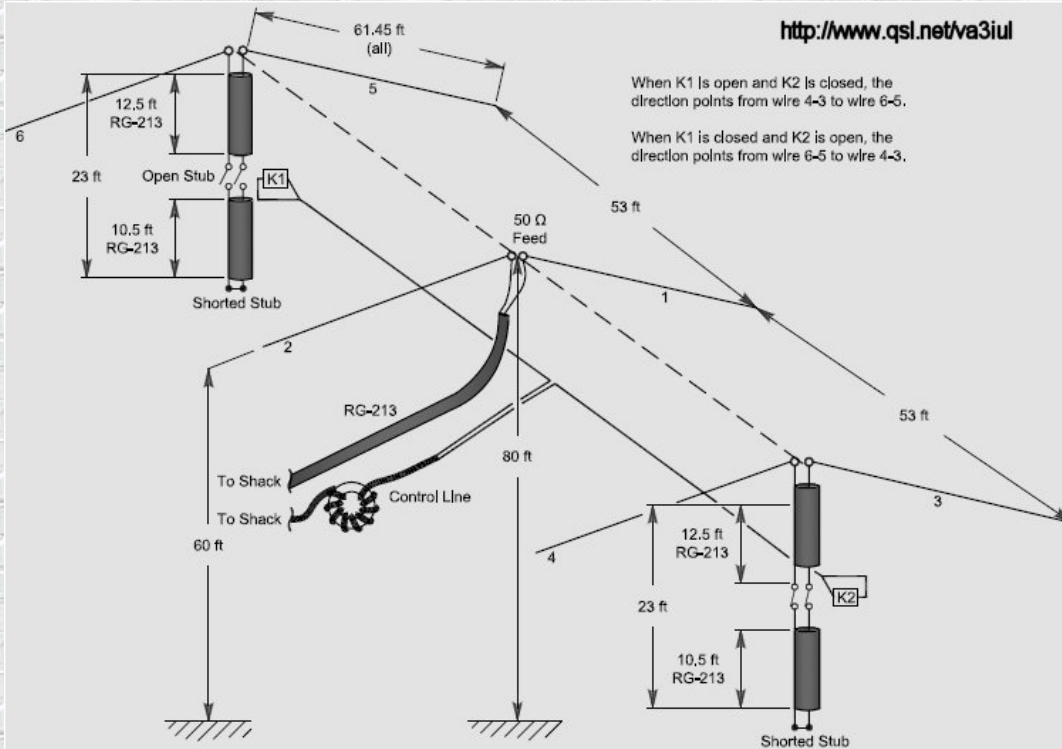
160 - Marconi Antenna for 136 kHz



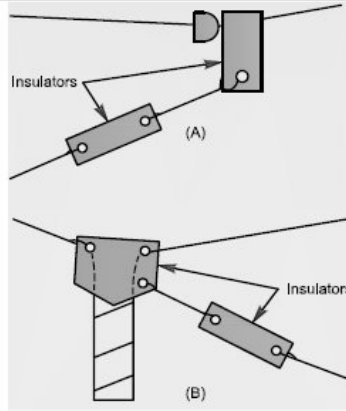
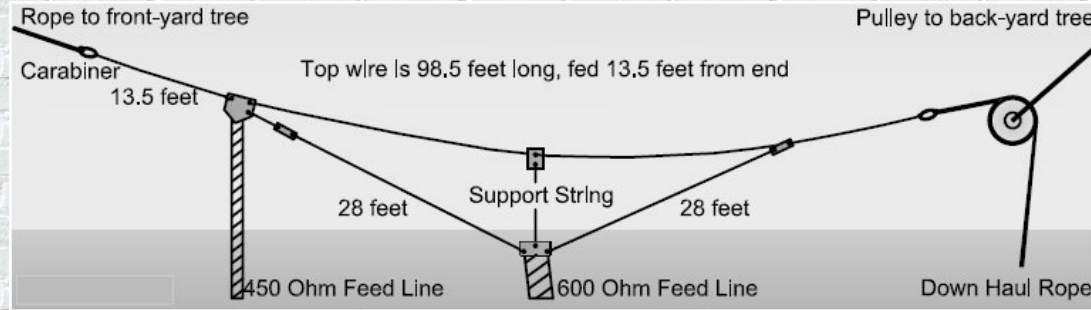
161 - Simple Killer Antenna for 40m



162 - Stub-Directed V Antenna for 80m

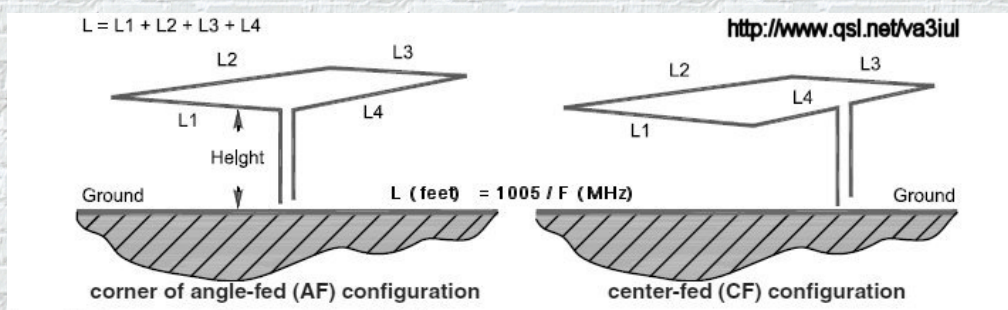


163 - KT0NY Over-and-Under DX Antenna for 20m



<http://www.qsl.net/va3iul>

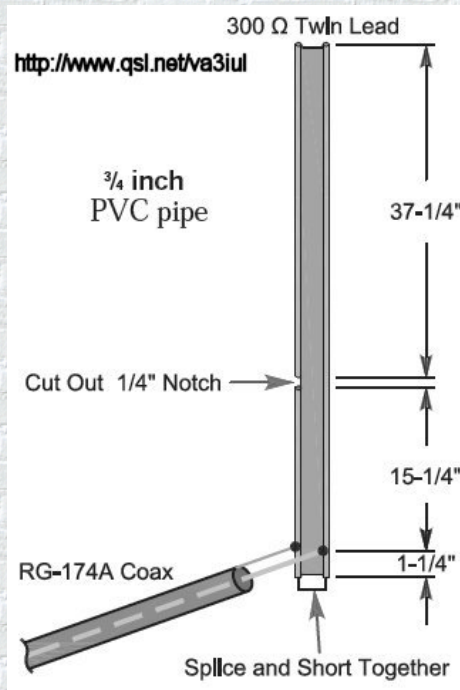
164 - Horizontal Loop Antennas



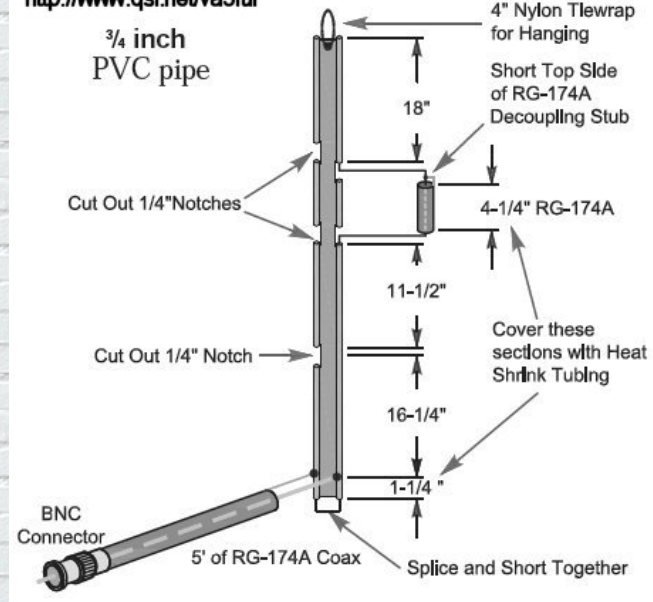
Loop Performance by Shape and Feed Point

	Circular Loop		Square Loop AF		Triangle Loop AF		Square Loop CF		Triangle Loop CF	
	Gain (dBi)	Elev	Gain (dBi)	Elev	Gain (dBi)	Elev	Gain (dBi)	Elev	Gain (dBi)	Elev
1.9 MHz	3.93	90°	3.46	90°	2.88	90°	3.70	90°	2.67	90°
3.9 MHz	8.47	90°	8.13	90°	7.76	90°	8.23	90°	8.04	90°
7.2 MHz	7.76	50°	7.35	50°	7.98	45°	7.64	45°	7.30	45°
10.1 MHz	8.34	35°	10.68	35°	7.35	30°	8.17	35°	7.24	30°
14.2 MHz	10.44	25°	12.50	25°	11.27	25°	10.25	25°	8.50	25°
18.1 MHz	11.18	20°	14.03	20°	12.32	20°	11.40	20°	8.84	20°
21.2 MHz	10.16	15°	14.55	15°	12.42	15°	11.28	15°	8.29	15°
24.9 MHz	10.77	15°	13.69	15°	14.09	15°	10.58	15°	10.10	15°
28.5 MHz	11.39	15°	12.85	10°	13.84	10°	11.19	10°	12.66	10°

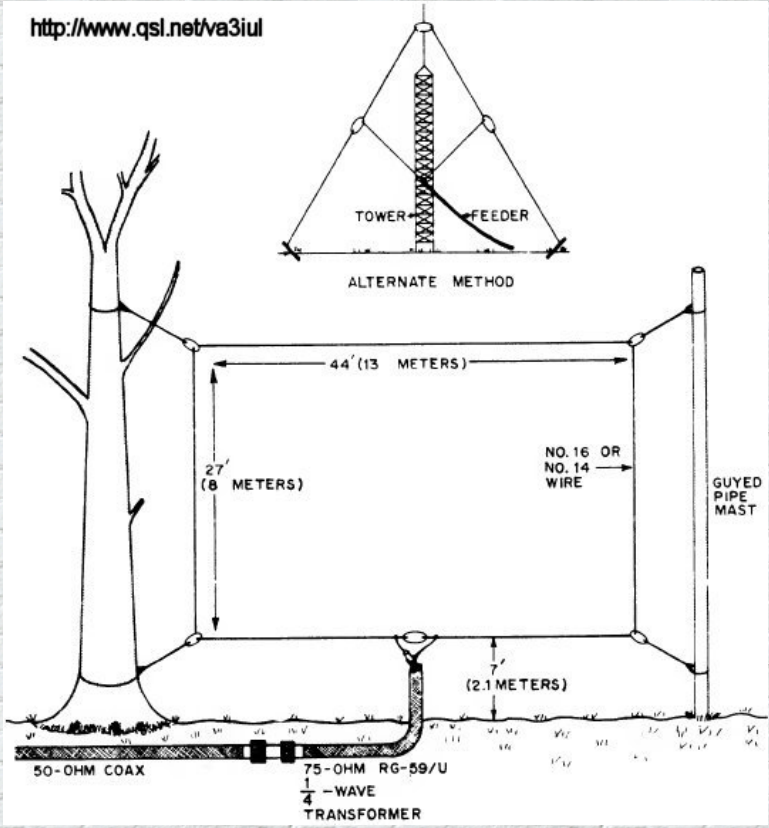
165 - Ribbon J-Pole for 2m



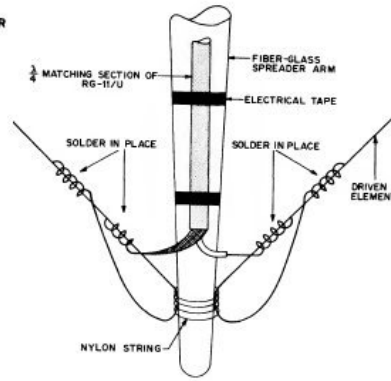
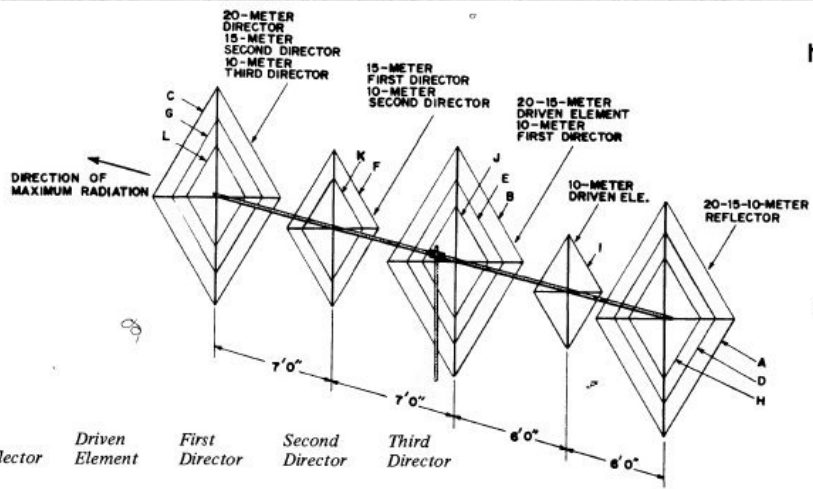
166 - Dual Band Ribbon J-Pole for 2m, 70cm



167 - Square Vertical Loop Antenna for 40m

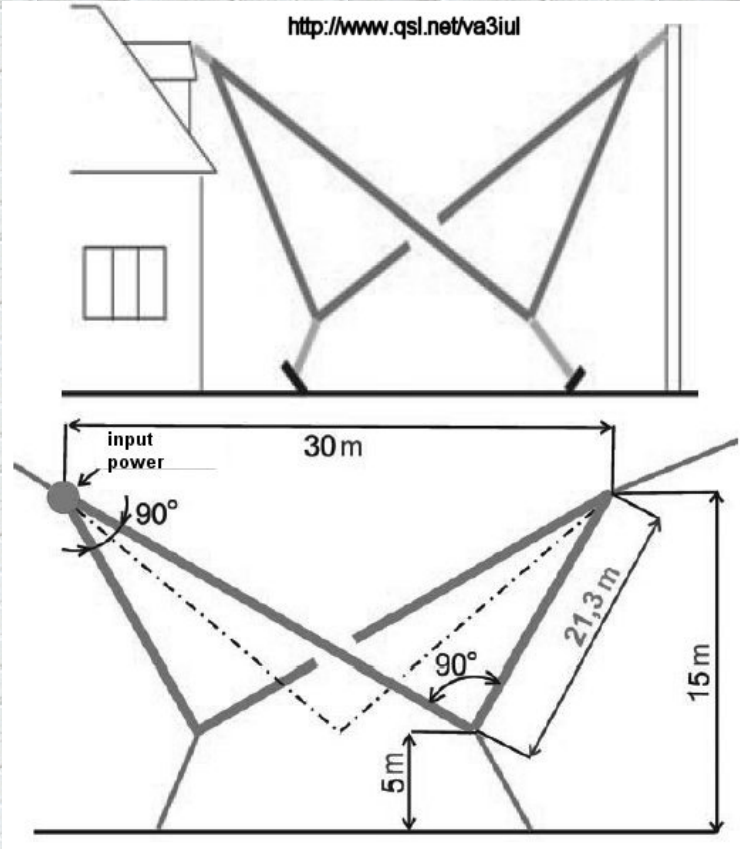


168 - Tri-Band Quad Antenna for 20m, 15m, 10m

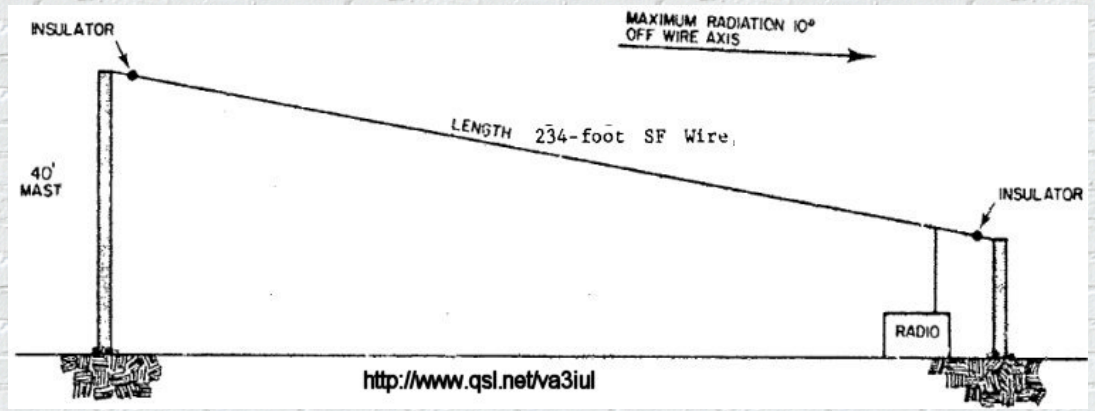


Band	Reflector	Driven Element	First Director	Second Director	Third Director
20 Meters	(A) 72' 8"	(B) 71' 3"	(C) 69' 6"	—	—
15 Meters	(D) 48' 6½"	(E) 47' 7½"	(F) 46' 5"	(G) 46' 5"	—
10 Meters	(H) 36' 2½"	(I) 35' 6"	(J) 34' 7"	(K) 34' 7"	(L) 34' 7"

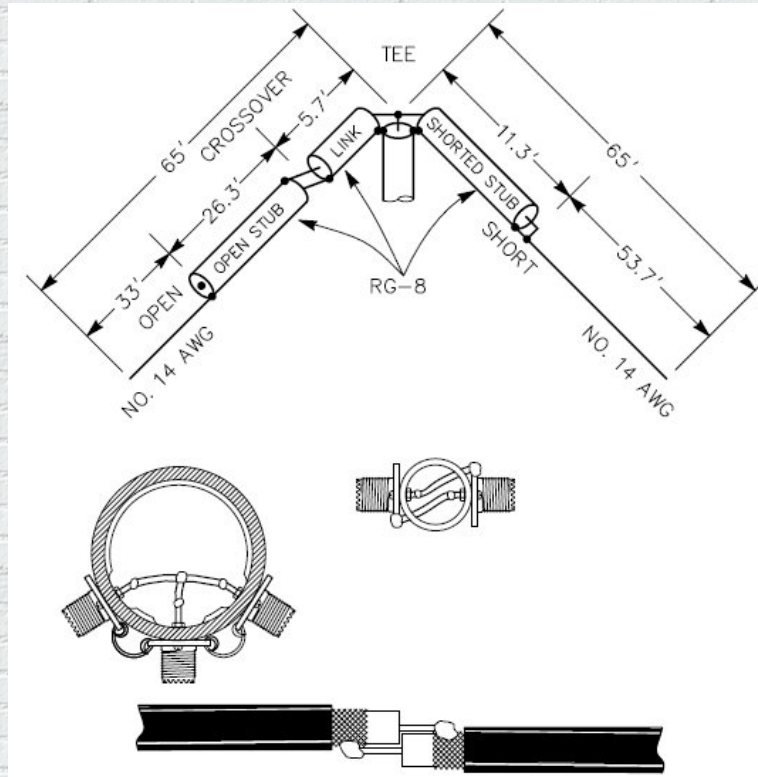
169 - 3D Quad Antenna for 80m, 40m, 20m, 15m, 10m



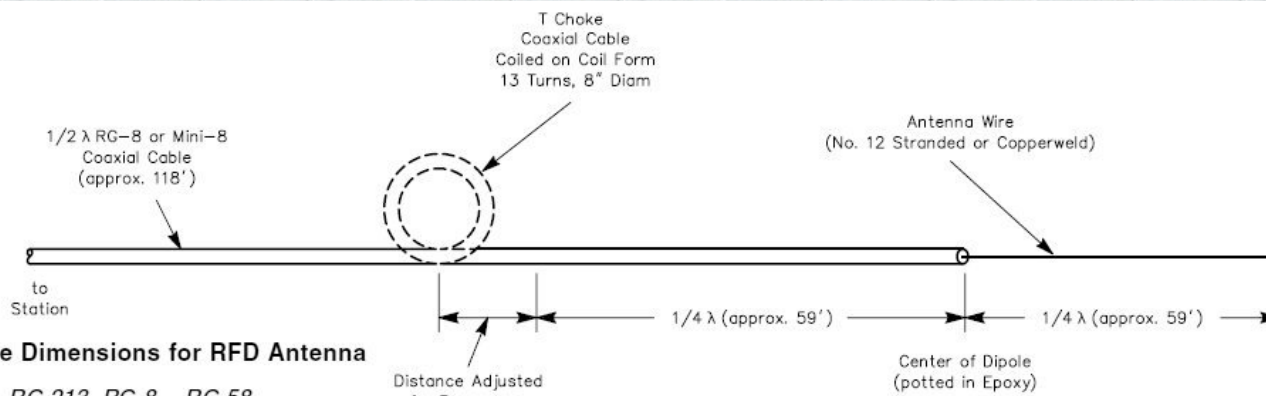
170 - Sloping Wire Antenna for 30m, 20m, 17m, 15m, 12m, 10m



171 - Broadband Dipole Antenna with Coaxial Resonator for 80m



172 - Resonant Feedline Dipole Antenna for 80m

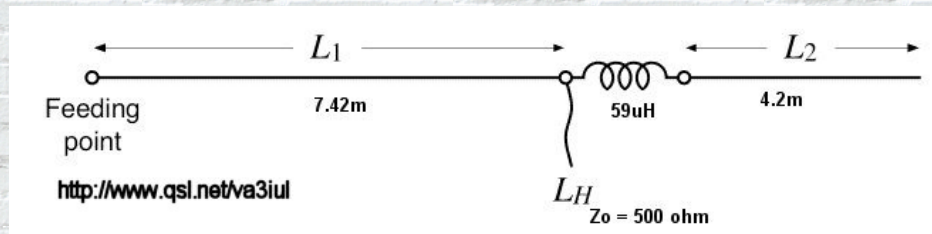


Choke Dimensions for RFD Antenna

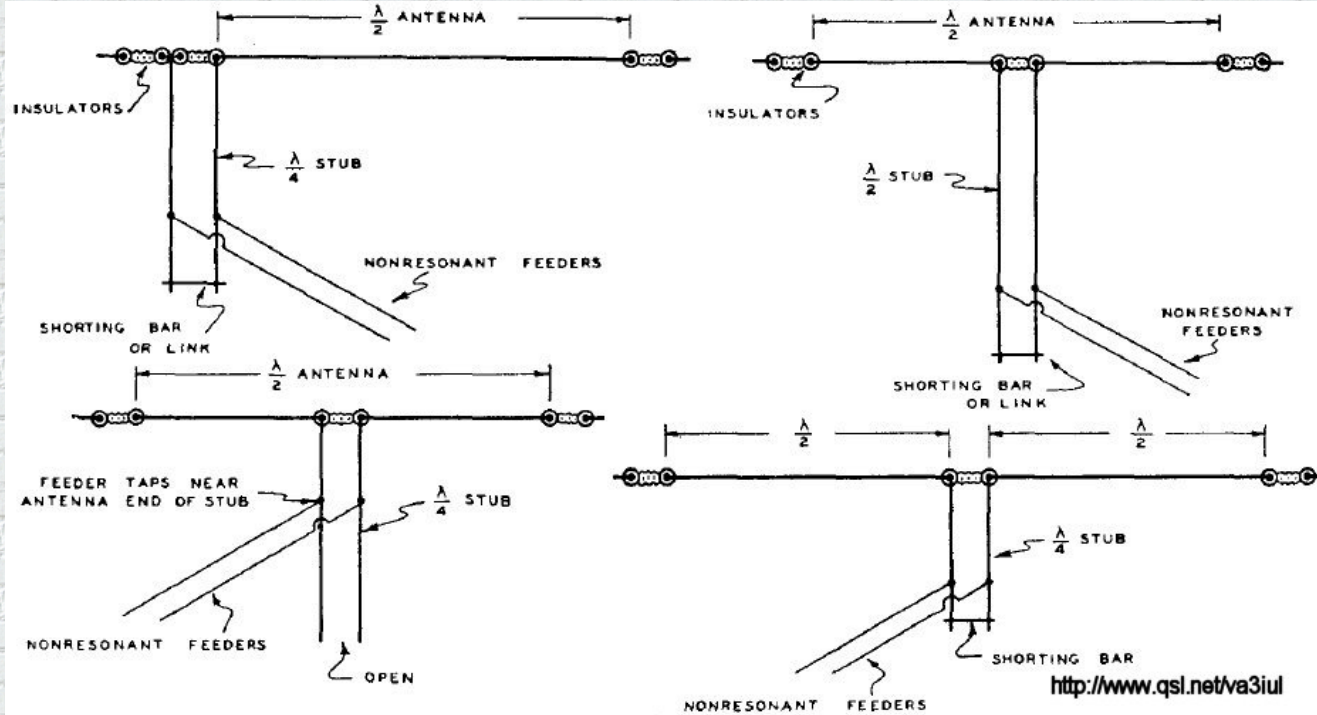
Freq	RG-213, RG-8	RG-58
3.5	22 ft, 8 turns	20 ft, 6-8 turns
7	22 ft, 10 turns	15 ft, 6 turns
10	12 ft, 10 turns	10 ft, 7 turns
14	10 ft, 4 turns	8 ft, 8 turns
21	8 ft, 6-8 turns	6 ft, 8 turns
28	6 ft, 6-8 turns	4 ft, 6-8 turns

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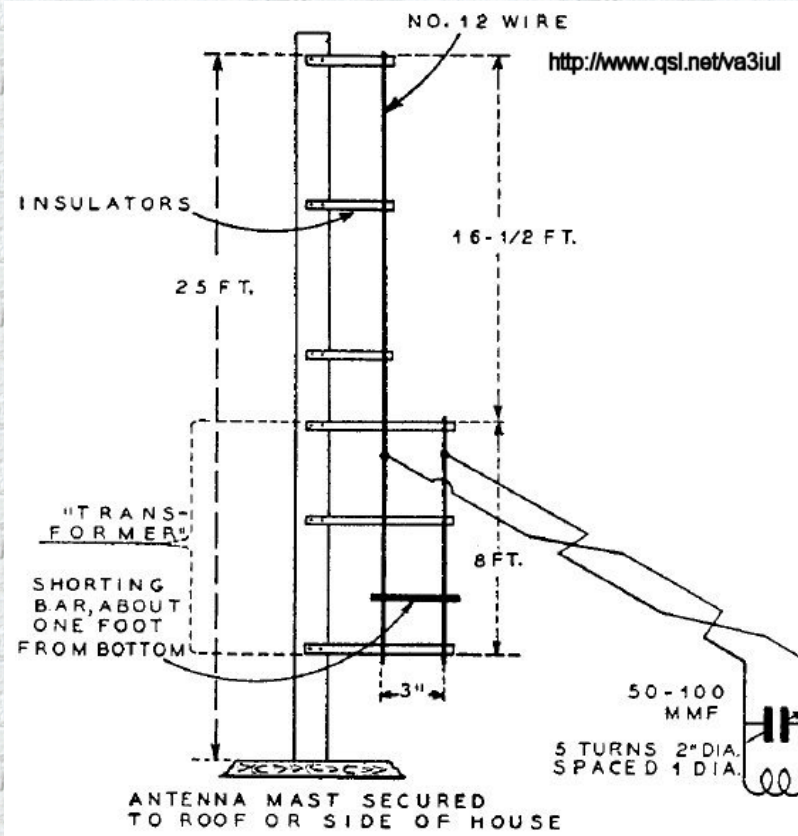
173 - Dual-Band Loading Wire Antenna for 80m, 30m



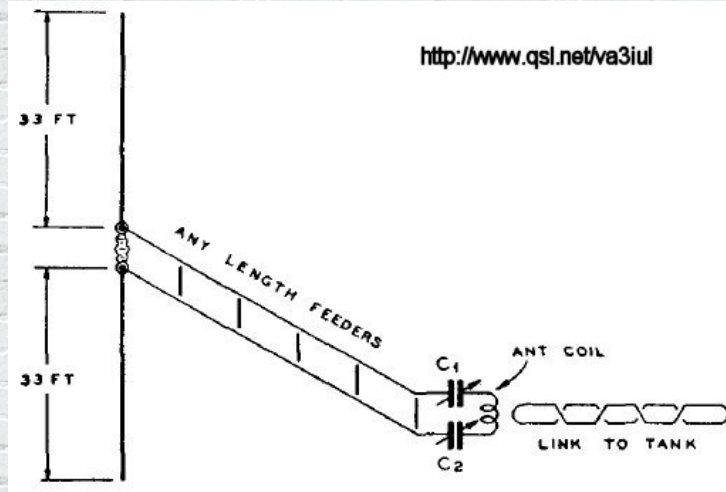
174 - Stub Matching Antennas



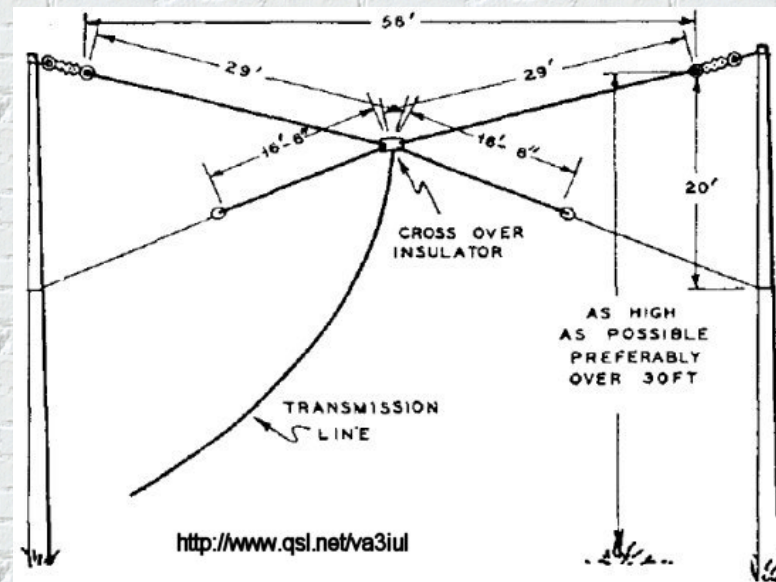
175 - J-Style Vertical Wire Antenna for 10m



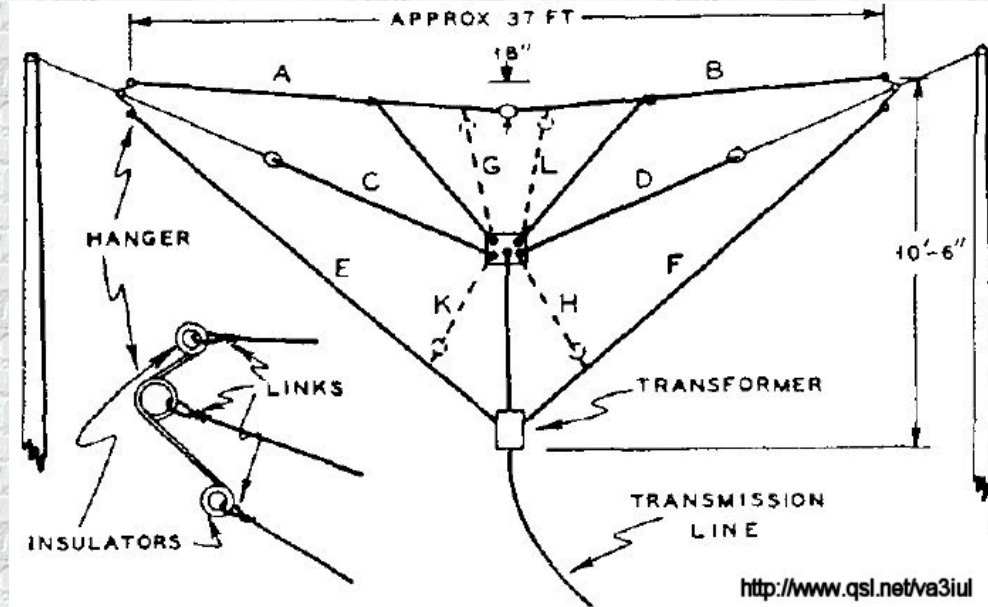
176 - Dual Band Vertical with Zepp Feeders for 40m, 20m



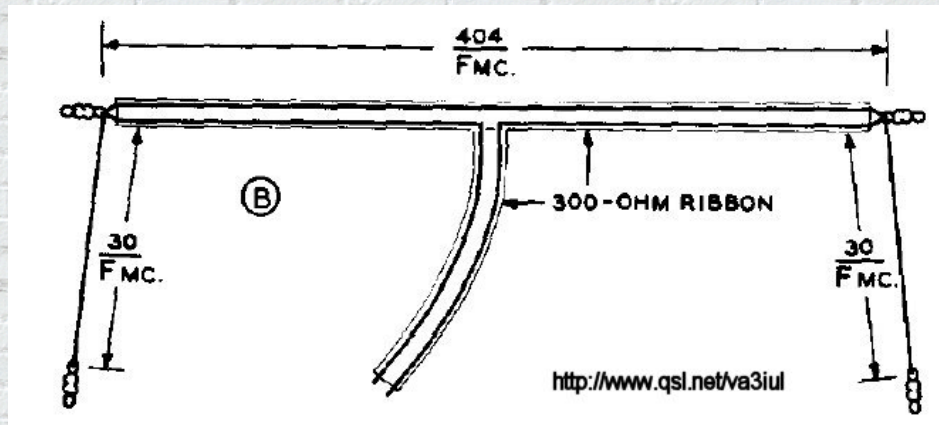
177 - RCA Double Doublet for 40m to 12m



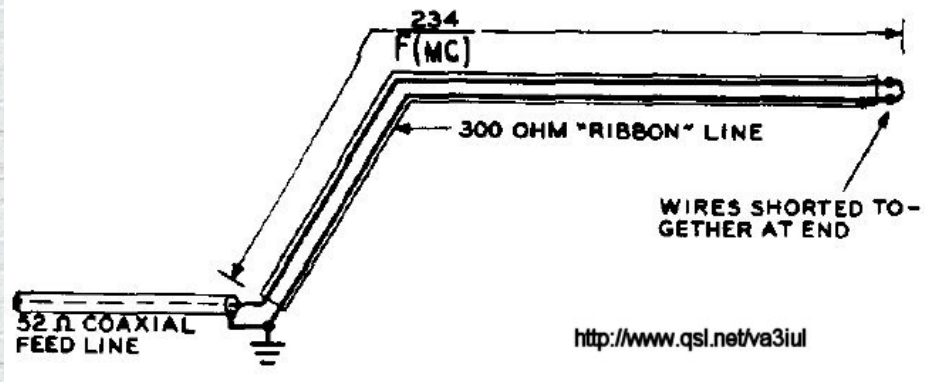
178 - RCA Spiderweb Antenna for 40m to 6m



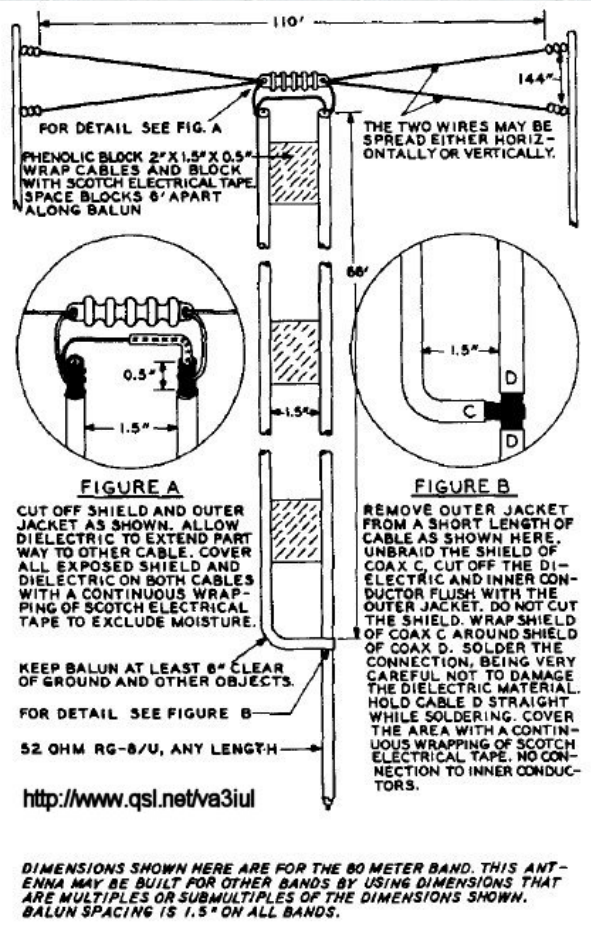
179 - Folded Dipole with Shorted Straps



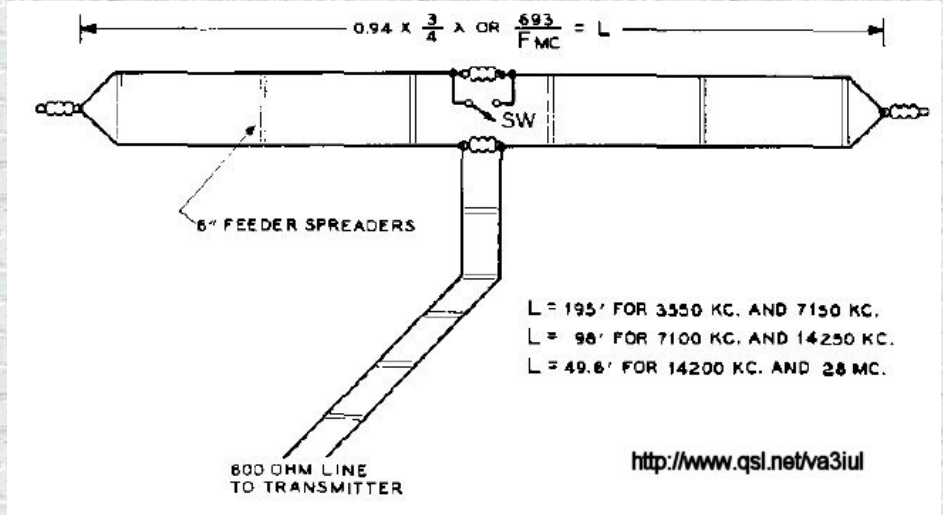
180 - Twin-Lead Marconi Antenna for 160m, 80m



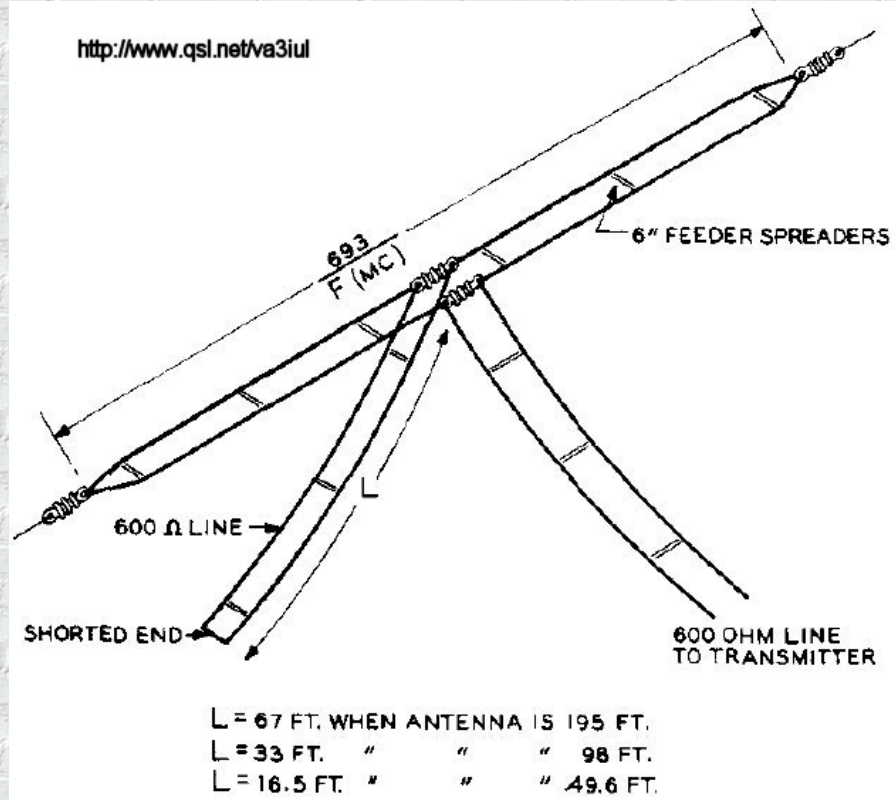
181 - Broadband Antenna Quarter-Wave Balun for 80m



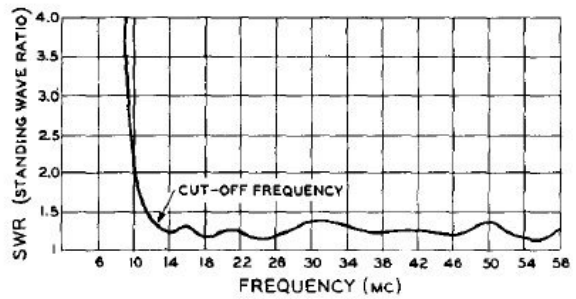
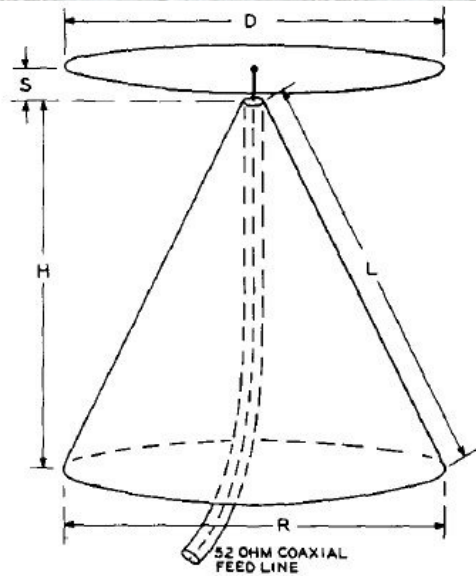
182 - Three-Quarter-Wave Folded Doublet for Dual-Band



183 - Three-Quarter-Wave Folded Doublet No-Switch for Dual-Band



184 - Wideband Omni-Directional Discone Antenna



20, 15, 11, 10, 6 METERS

D=12' L=18'
S=10" R=18'
H=15' 7"

DIMENSIONS

15, 11, 10, 6 METERS

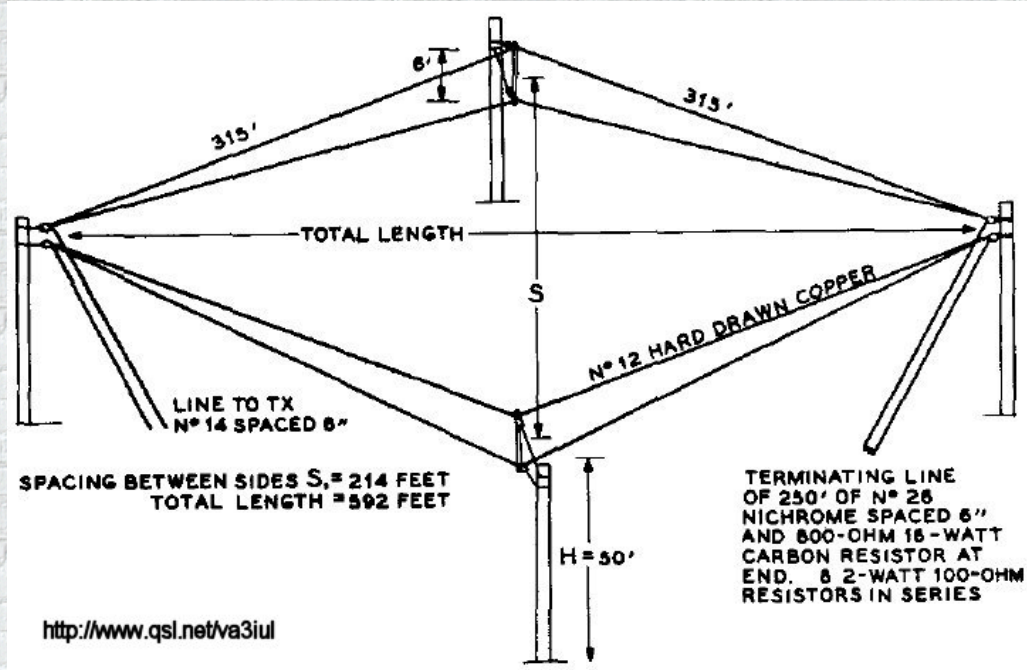
D=8' L=12'
S=6" R=12'
H=10' 5"

11, 10, 6, 2 METERS

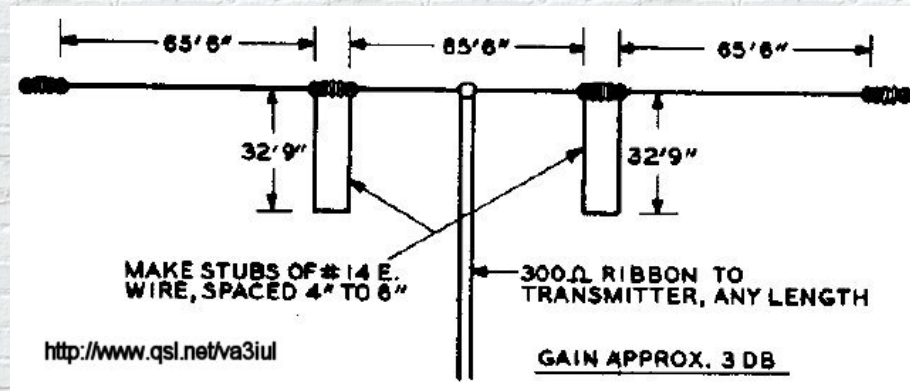
D=6' L=9' 6"
S=4" R=9' 6"
H=8' 3"

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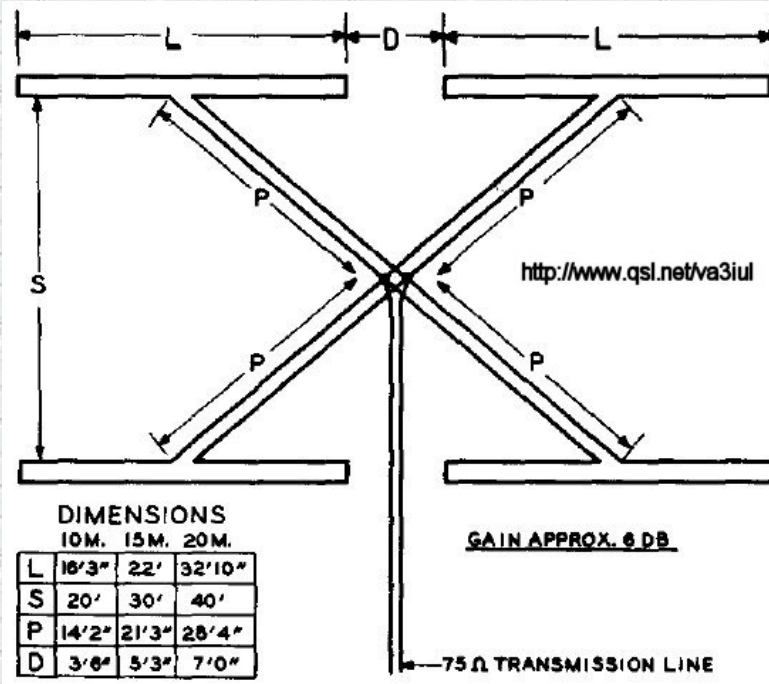
185 - Wideband Rhombic Antenna for 40m to 10m



186 - Pre-Cut Linear Array Antenna 3dB-Gain for 40m



187 - X-Array Antenna 6dB-Gain for 20m, 15m, 10m



DIMENSIONS
10M. 15M. 20M.

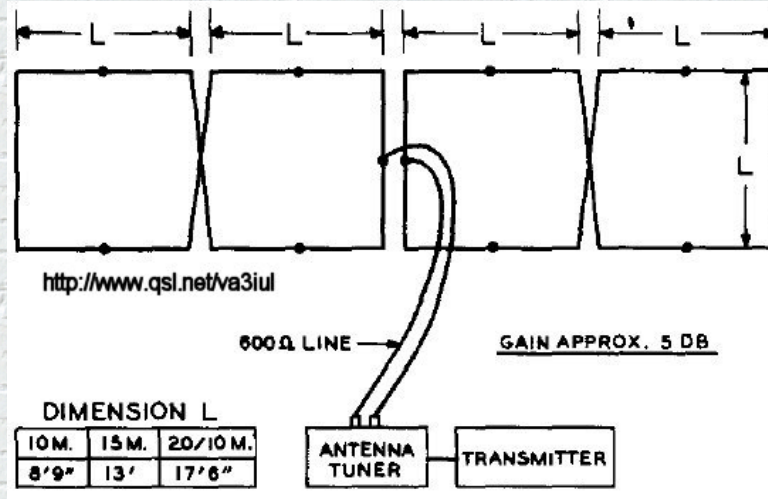
L	16'3"	22'	32'10"
S	20'	30'	40'
P	14'2"	21'3"	28'4"
D	3'6"	5'3"	7'0"

GAIN APPROX. 6 DB

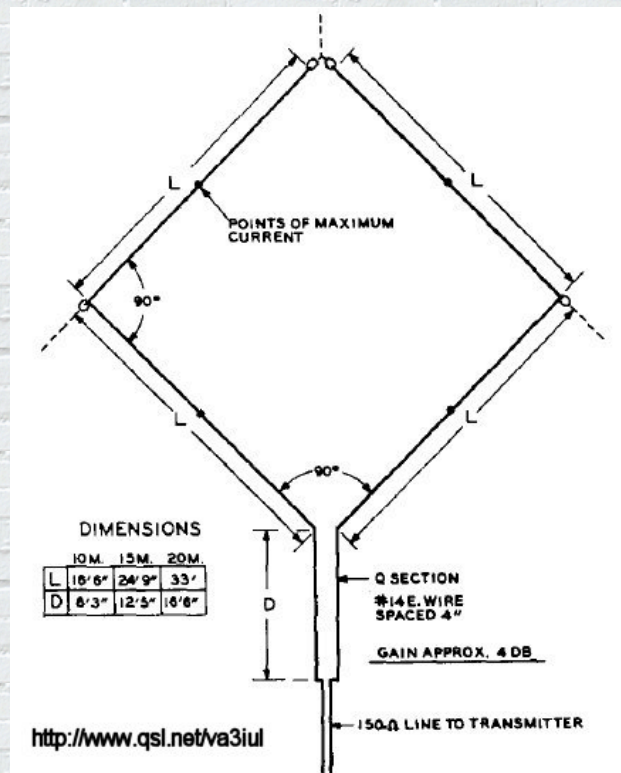
75 Ω TRANSMISSION LINE

The entire array (with the exception of the 75-ohm feed line) is constructed of 300-ohm ribbon line. Be sure phasing lines (P) are poled correctly, as shown.

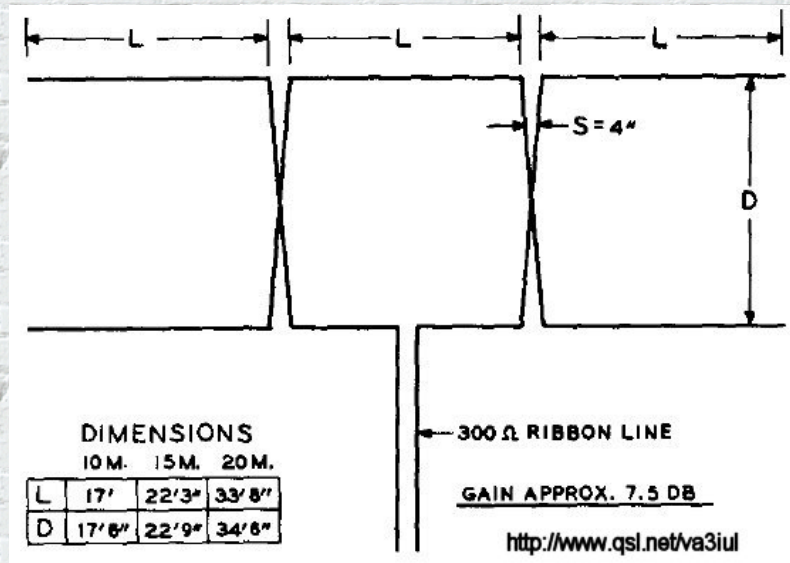
188 - Double-Bruce Array Antenna 5dB-Gain for 20m, 10m



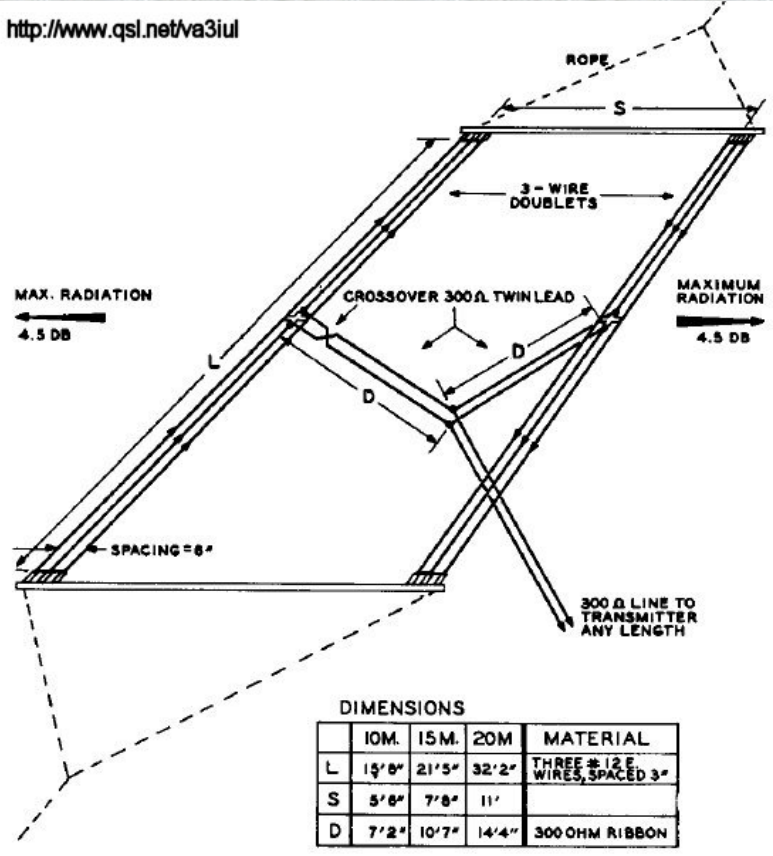
189 - Bi-Square Broadside Array 4dB-Gain for 20m, 15m, 10m



190 - Six-Shooter Broadside Array 7.5dB-Gain for 20m, 15m, 10m

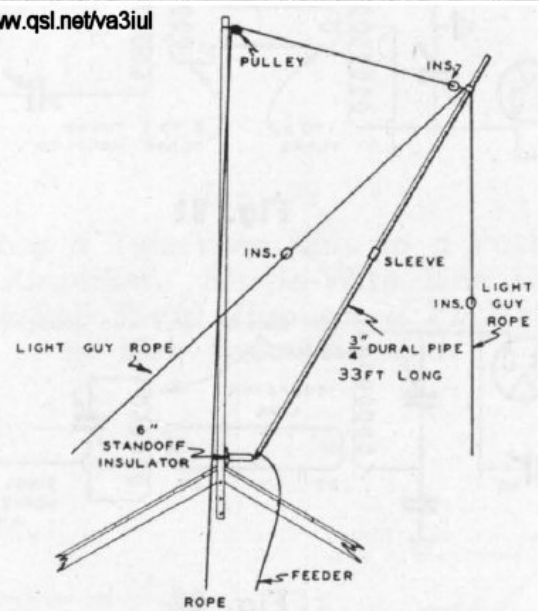


191 - Triplex Flat-Top Beam 4.5dB-Gain for 20m, 15m, 10m



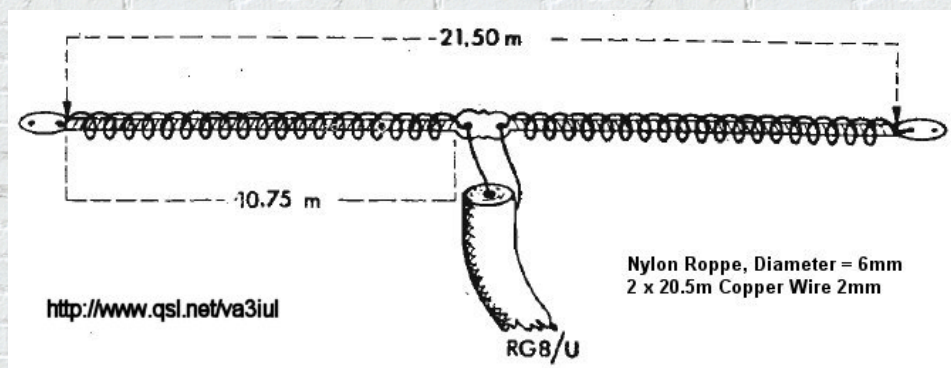
192 - Dual-Band Tilt Antenna for 20m, 10m

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TWO BAND (40-20 METER) TILT ANTENNA —
VERTICAL FOR 20 METERS — TILT 54° FROM HORIZON
FOR 10 METERS

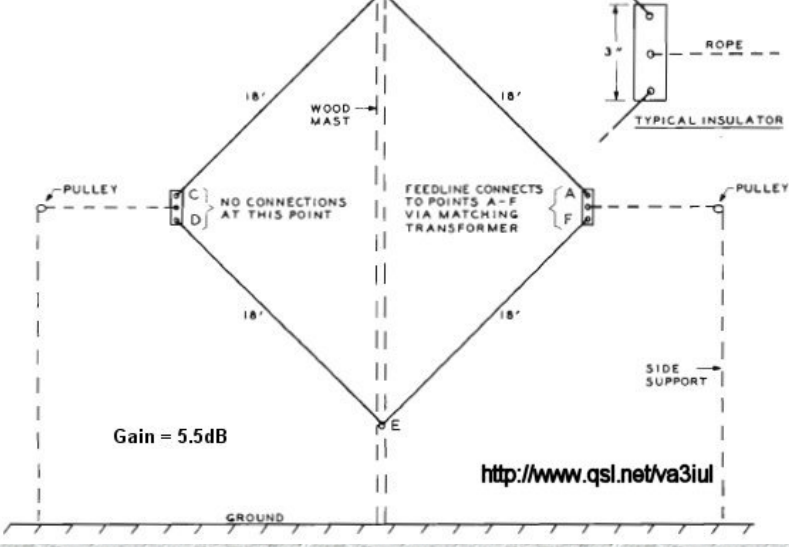
193 - Super Space Multiband Dipole Antenna for 80m to 10m



<http://www.qsl.net/va3iul>

194 - Bi-Square Beam Antenna Gain=5.5dB for 10m

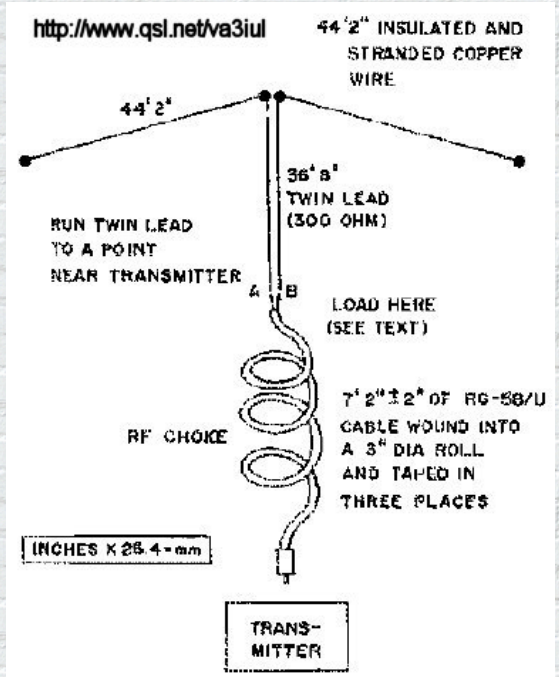
Feed at AF = Horizontal Polarization
 Feed at E = Vertical Polarization



Gain = 5.5dB

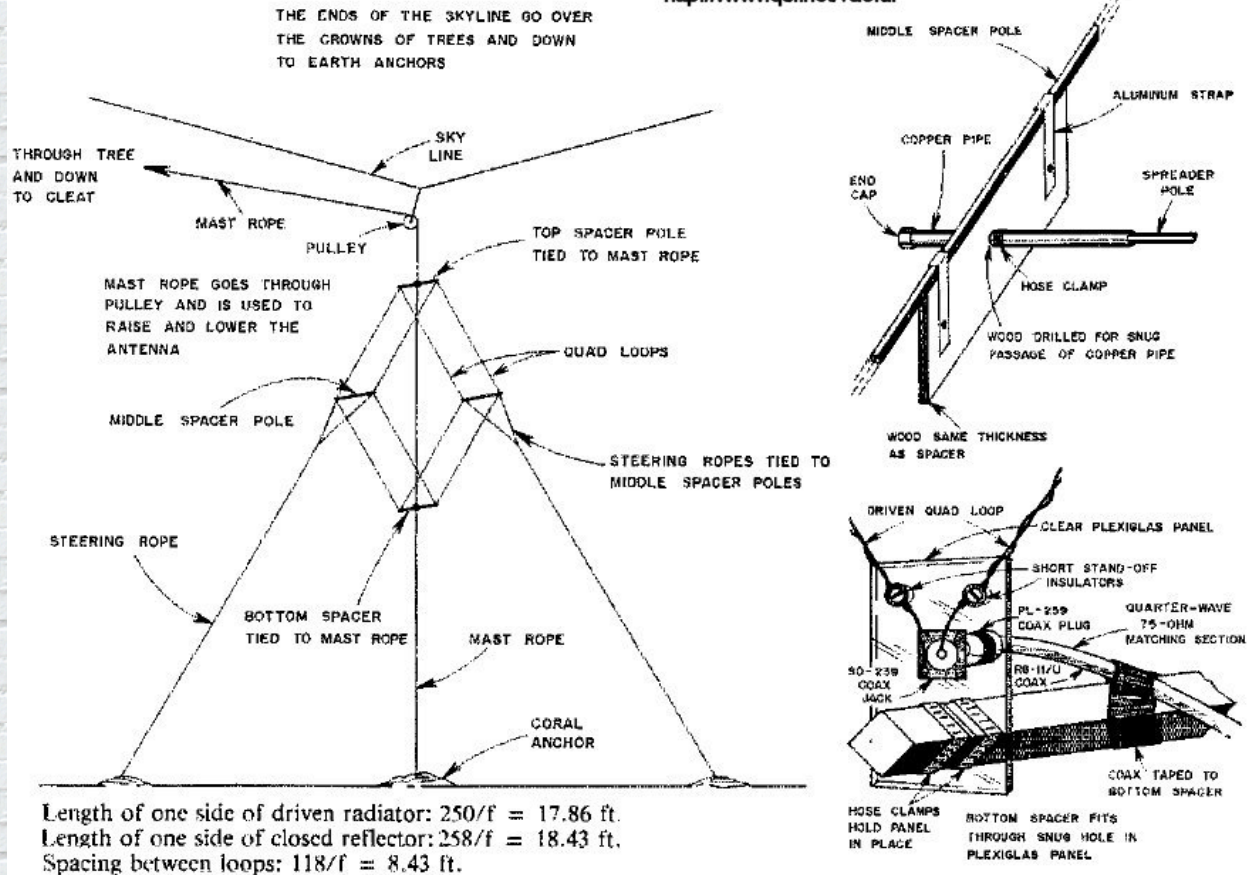
<http://www.qsl.net/va3iul>

195 - Cousin of G5RV Multiband Antenna for 40m to 10m

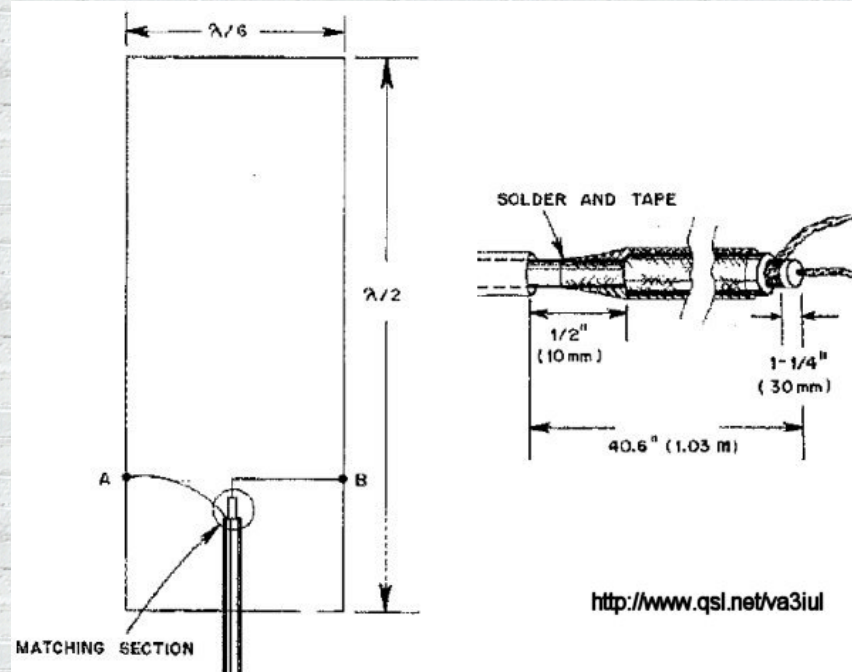


196 - Cayman Quad Antenna for 20m

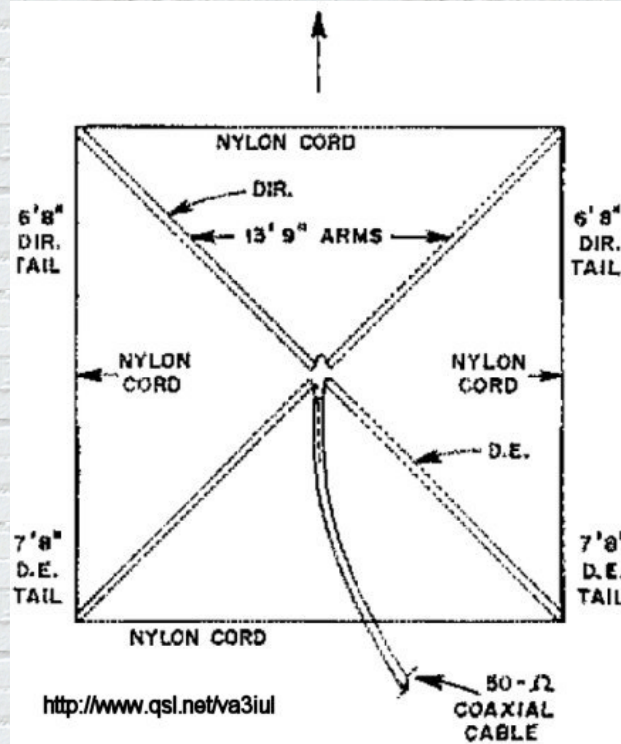
<http://www.qsl.net/va3iul>



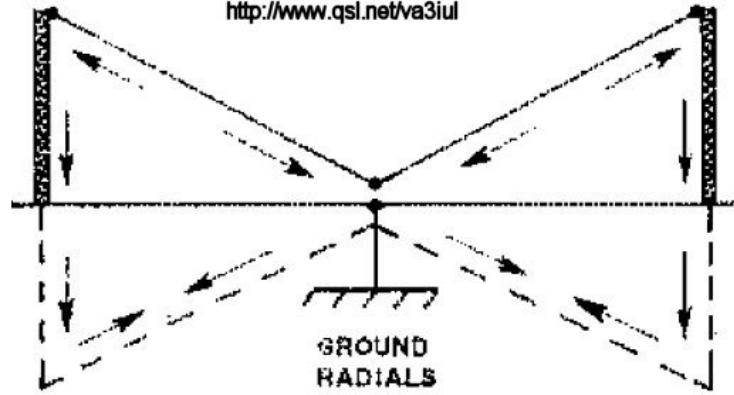
197 - Hentenna Gain=3dB with Bazooka Match for 6m



198 - X-Beam Antenna Gain=3dB for 20m



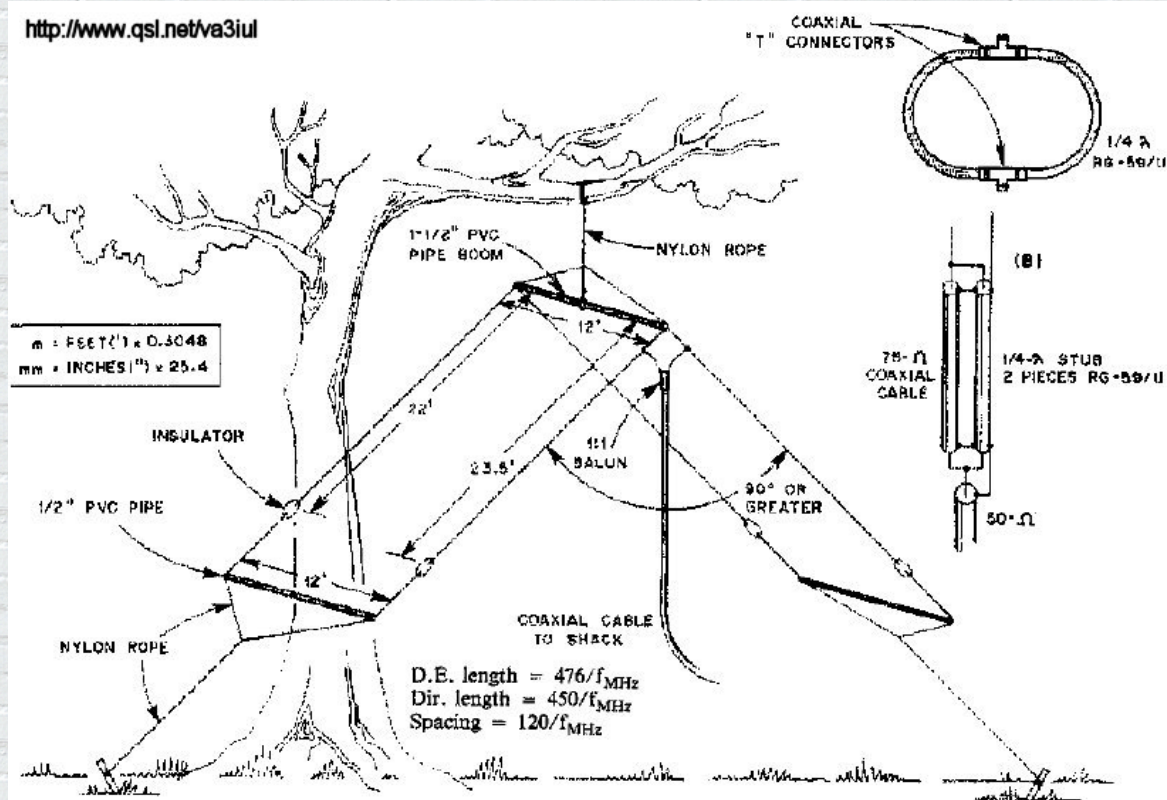
199 - Twin Delta Loop Antenna Gain=6dB for 160m, 80m, 40m



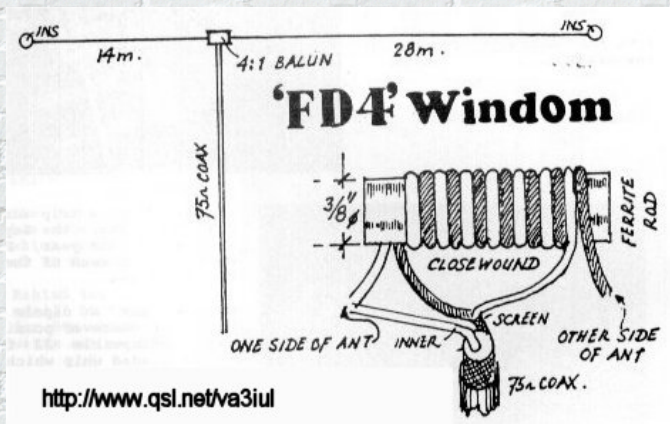
Twin-Delta Loop, with the image in the ground plane.

<i>Band</i>	<i>Tower Height (ft)</i>	<i>Length of Sloping Wires (ft)</i>
160 m ^t	102.03	204.06
80 m	49.86	99.72
40 m	25.92	51.84

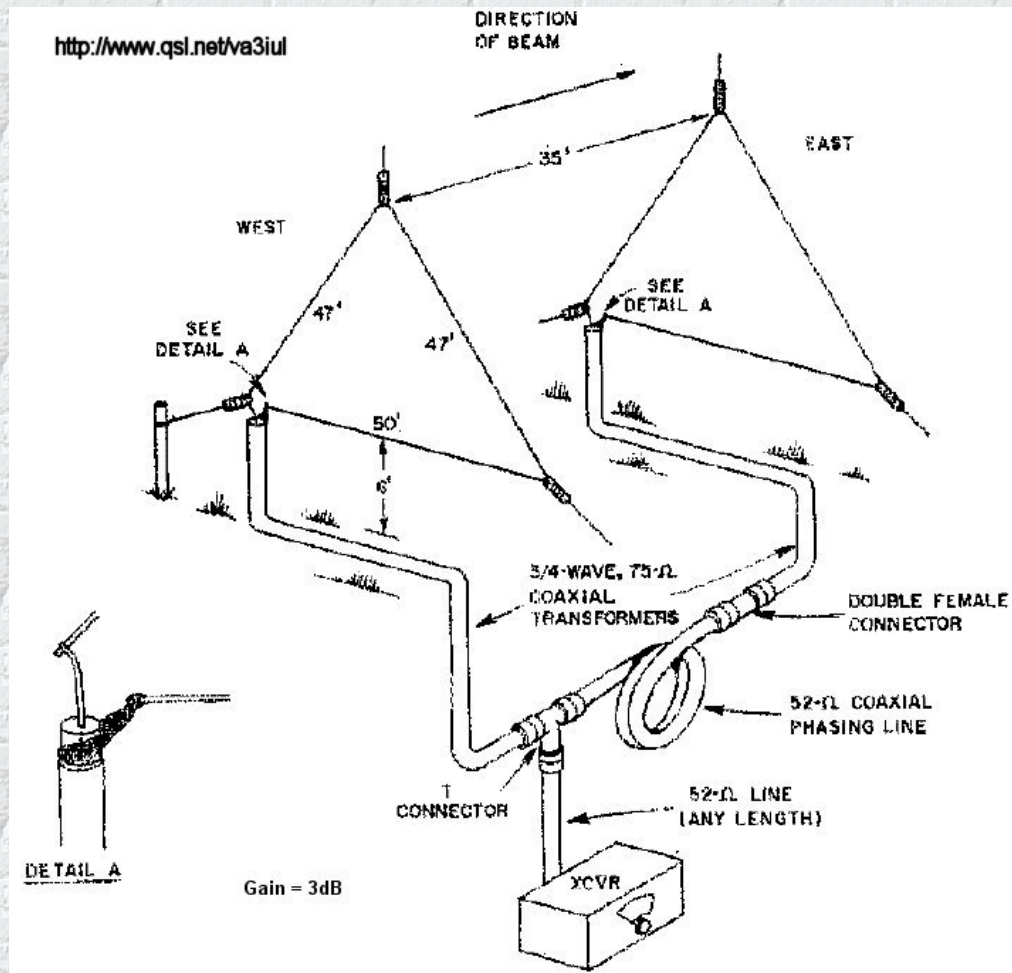
200 - Inverted-V Beam Antenna for 30m



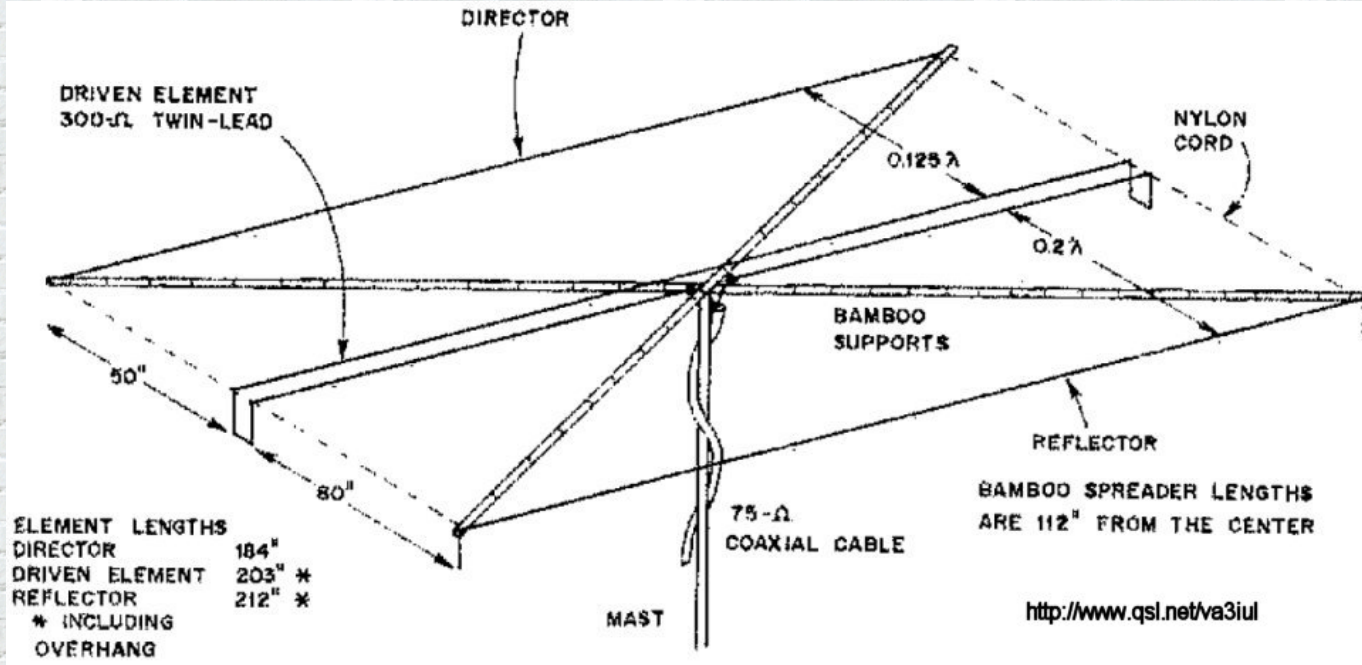
201 - FD4 Window Antenna for 80m, 40m, 20m, 10m



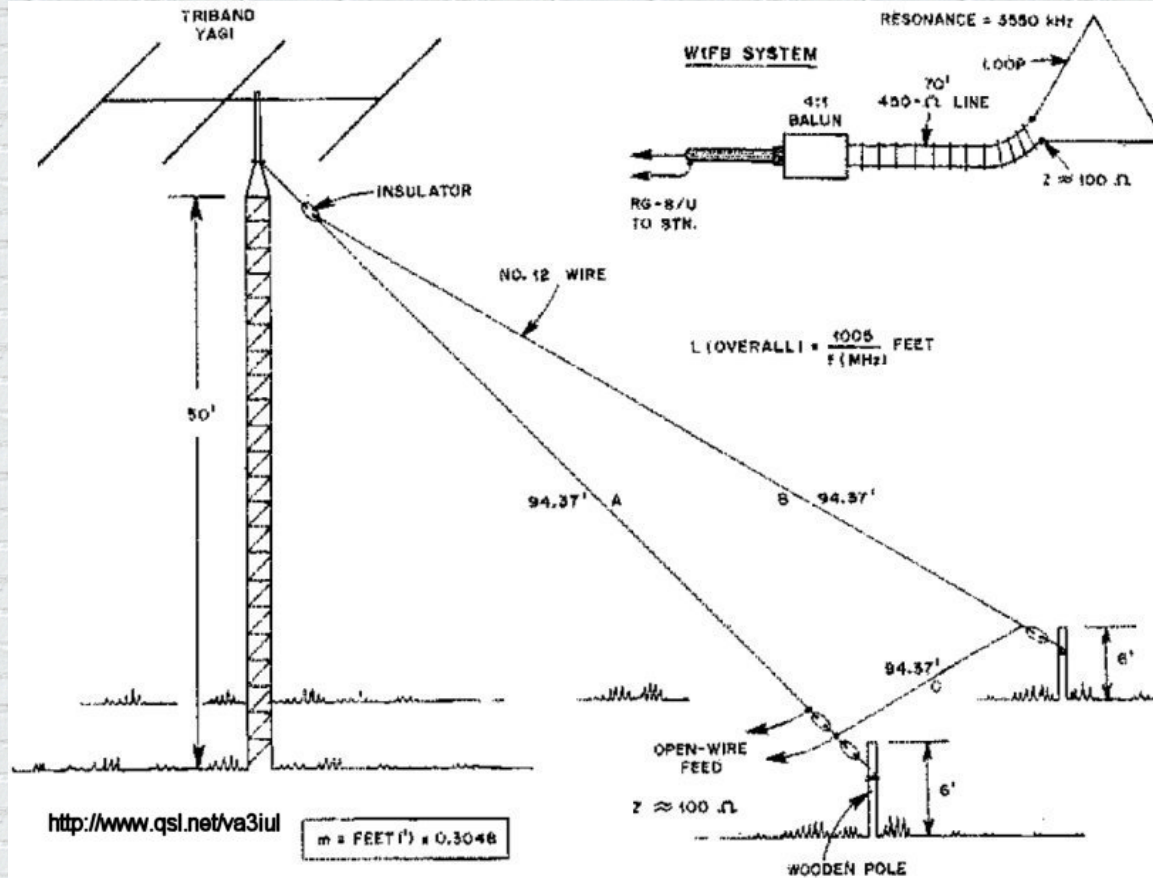
202 - Two Elements Phased Delta Loop for 40m



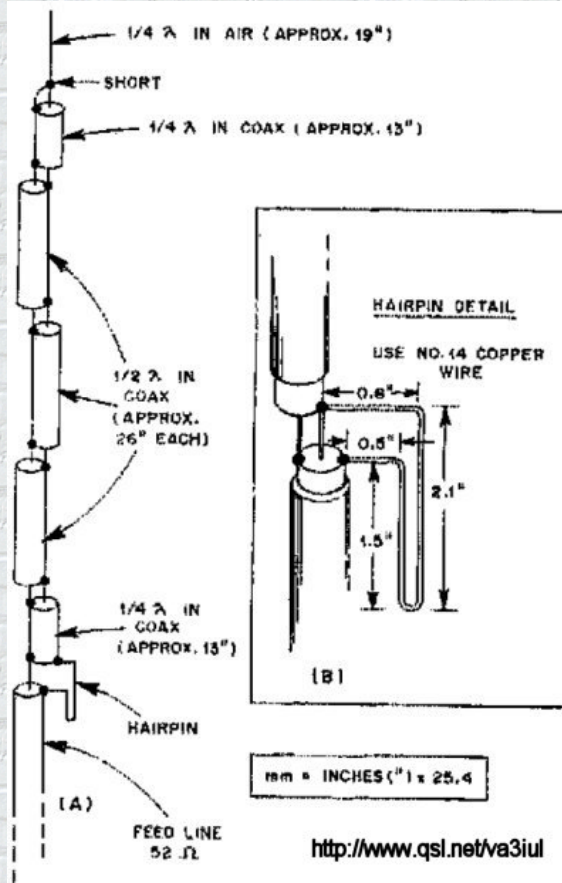
203 - Three Elements Wire Yagi for 10m



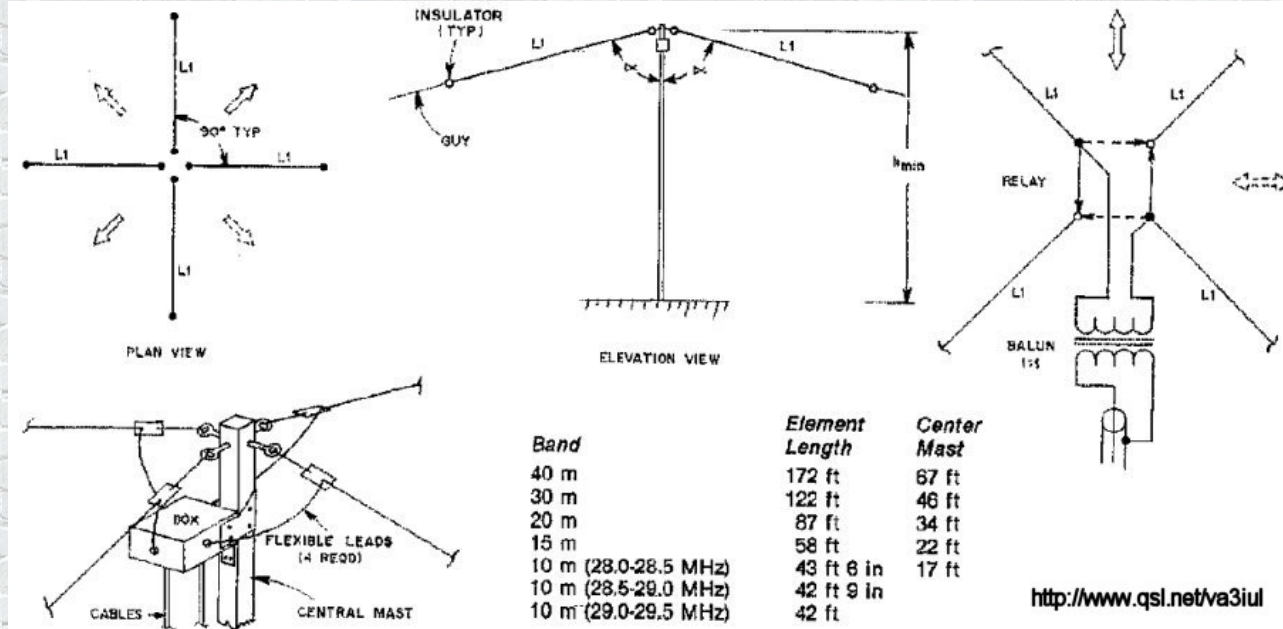
204 - Low Radiation Angle Full-Wave Loop Antenna for 80m



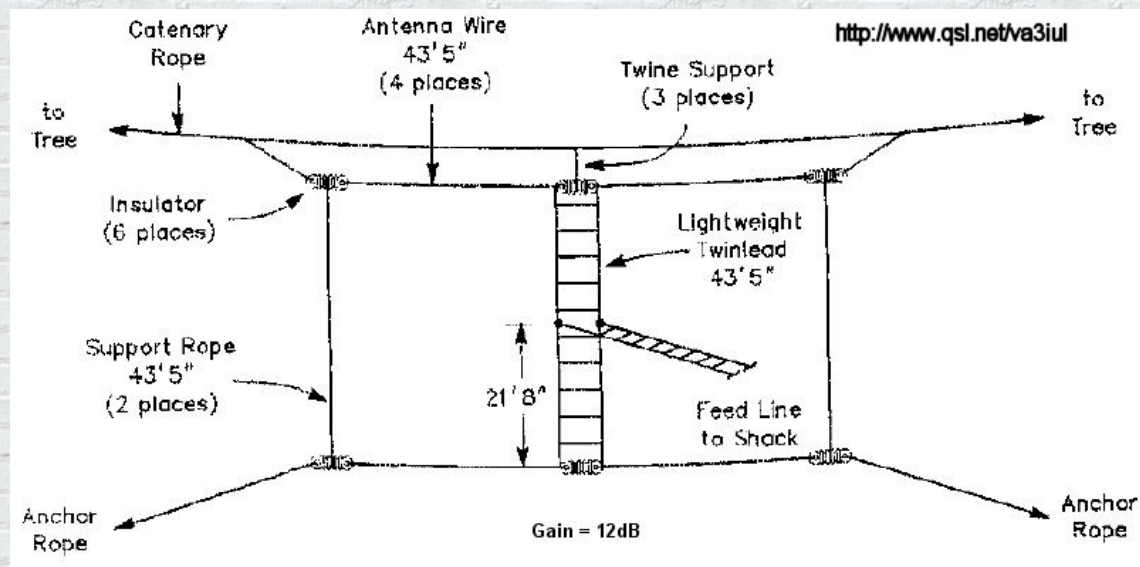
205 - Collinear Antenna Gain=3dB for 2m



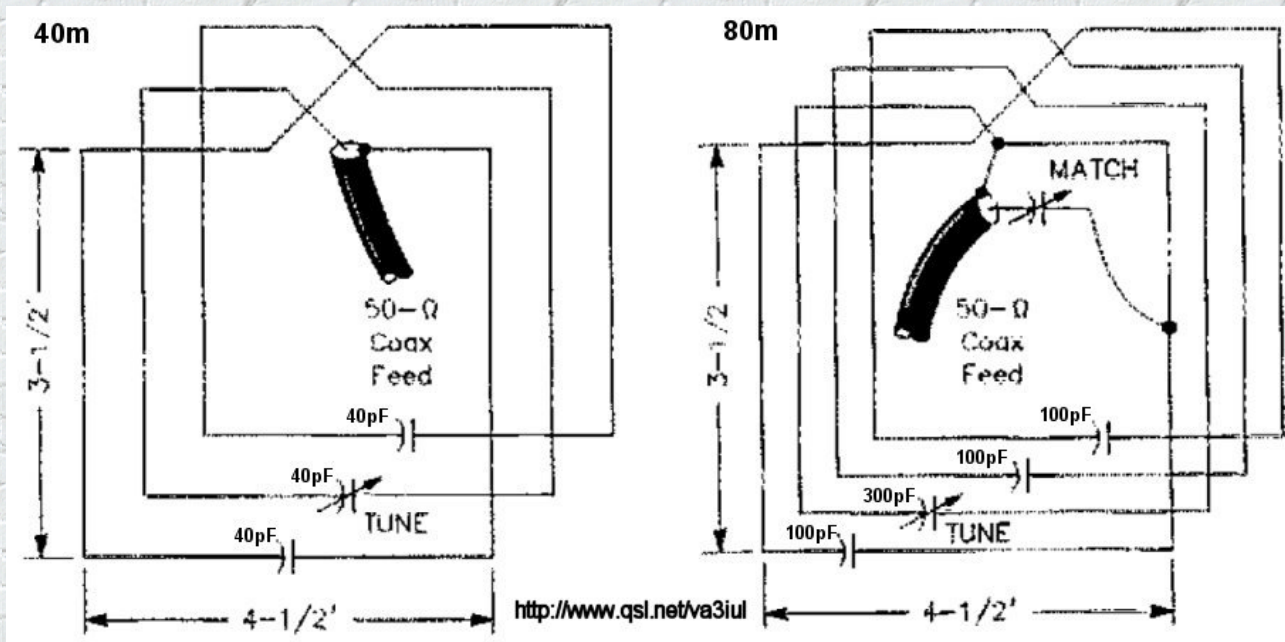
206 - X-Ray Monoband Antenna Gain=6.5dBd



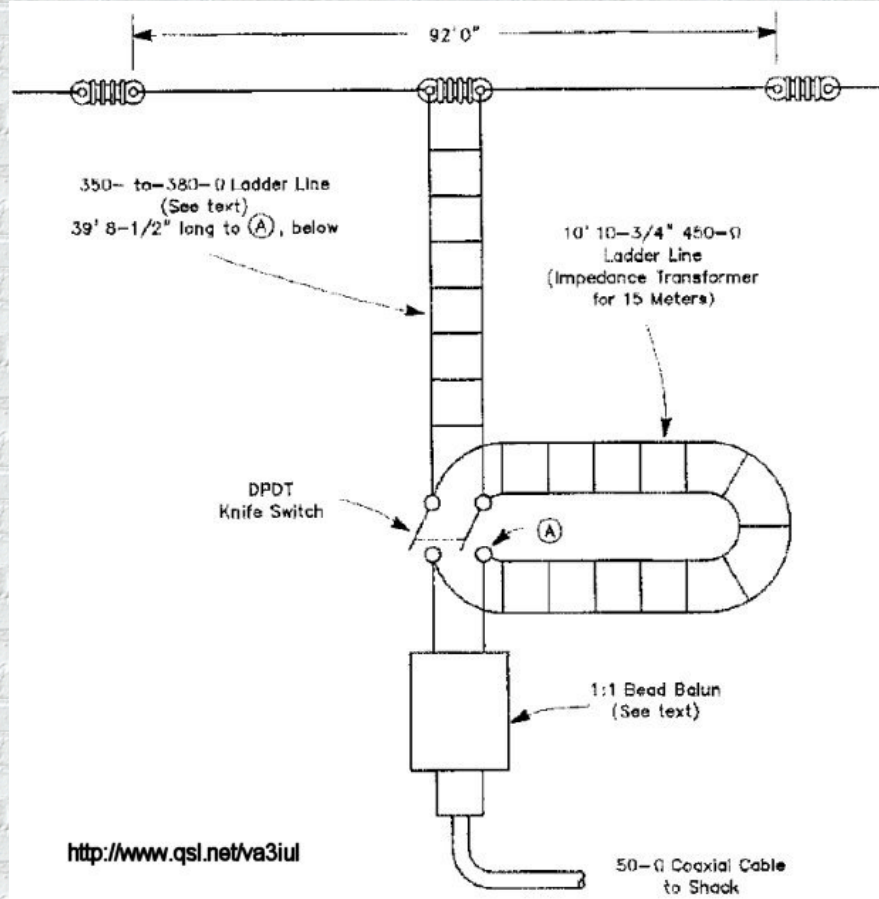
207 - Broadside Collinear Curtain Array for 20m



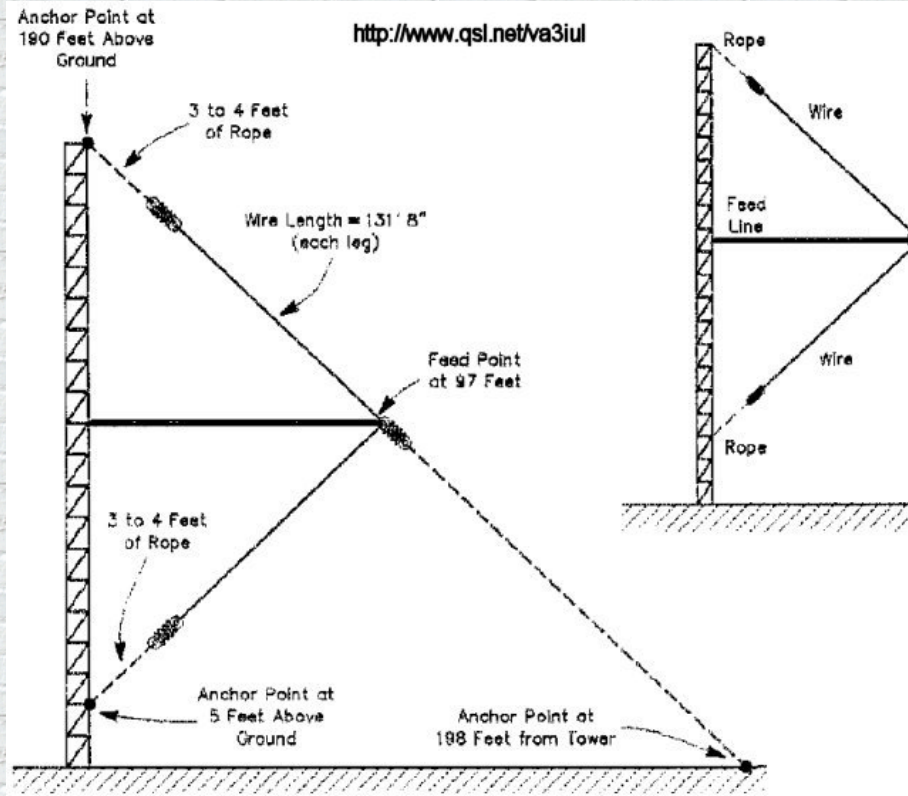
208 - Shrunk Loop Antenna for 80m, 40m



209 - $\lambda/3$ Multiband Dipole for 40m, 20m, 17m, 15m, 13m, 10m



210 - K3LR Sloper Antenna Gain=3dB for 160m



211 - Mini Folded Vertical Monopole Antenna for 160m, 80m, 40m

0.19λ MINI - MONOPOLE		
FREQ.(mc/M)	HEIGHT (H)	TUNING COIL (L)
1.825	100'	4.5 μH
1.925	90'	
3.5	51'	2.2 μH
4.0	46'	
7.0	25'6"	1.1 μH

0.075λ MINI MONOPOLE	
FREQ.(mc/M)	HEIGHT (H)
1.825	40'
1.925	36'
3.5	20'
4.0	18'
7.0	10'

SWR METER

XMTR

L

H

SWR METER

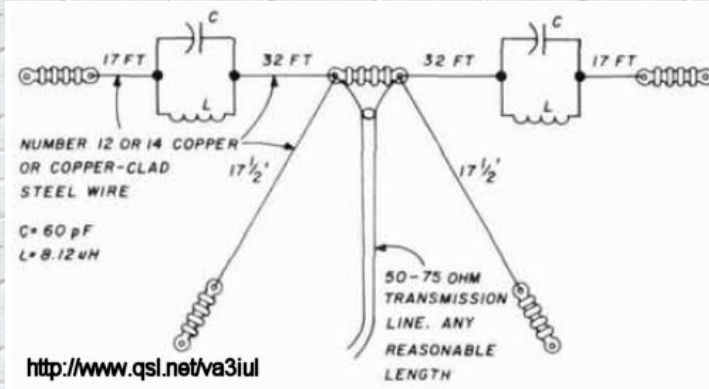
XMTR

360 pF

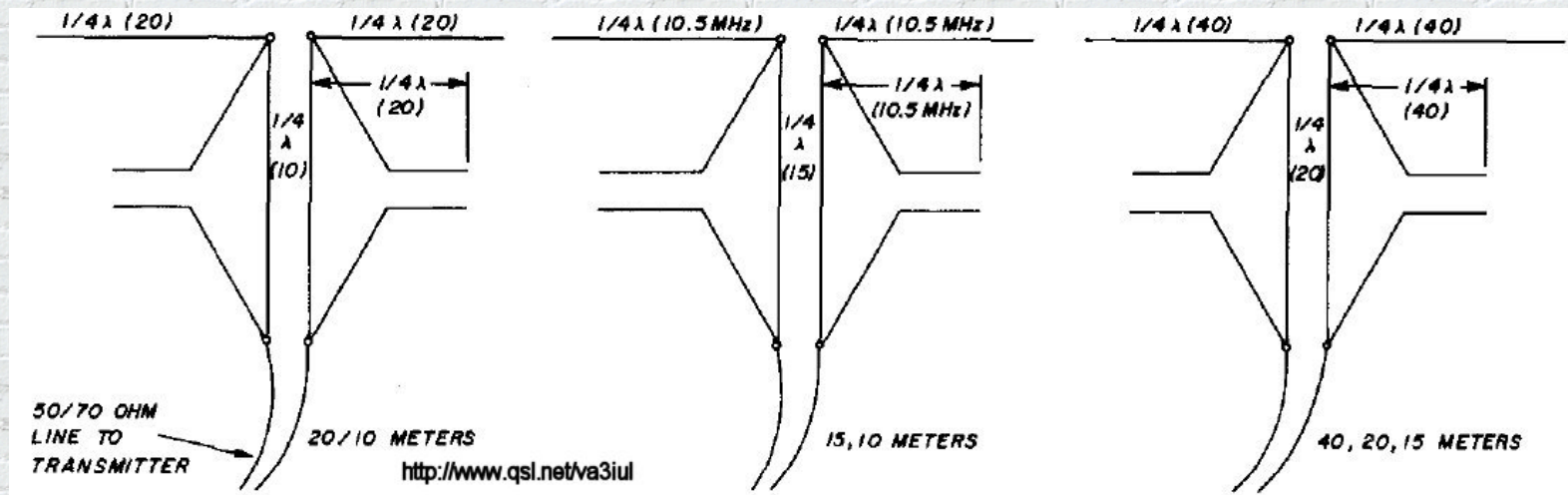
H

<http://www.qsl.net/va3iul>

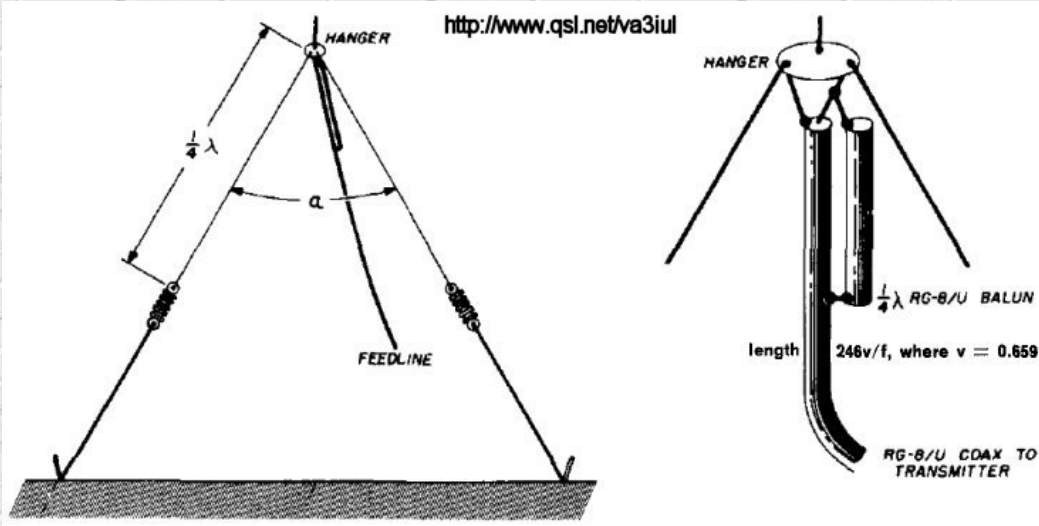
212 - Three Band Dipole for 80m, 40m, 20m



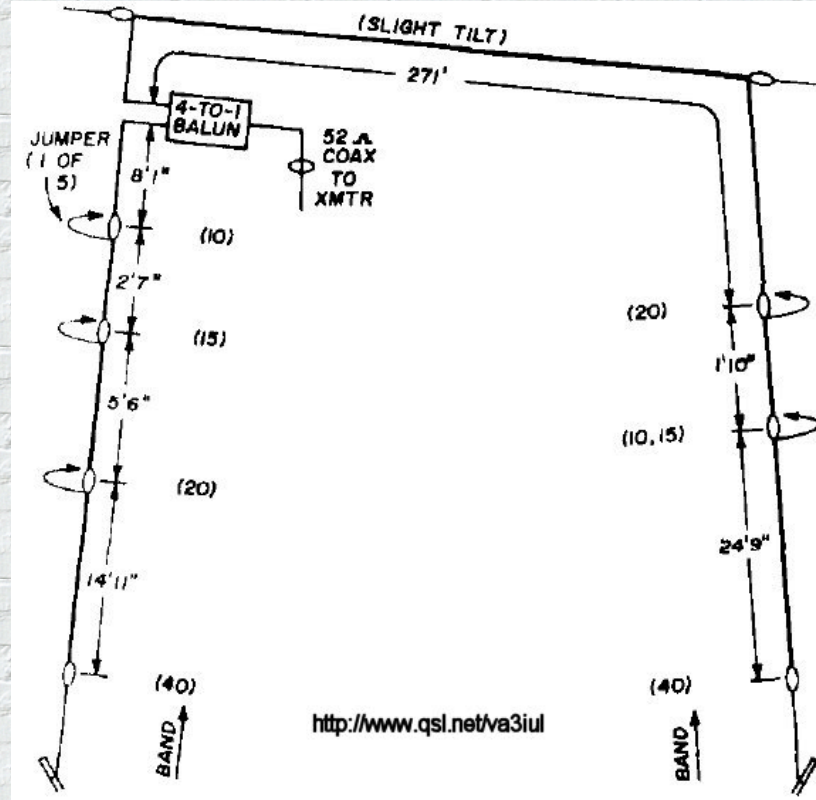
213 - Stub Matched Dipole Antenna



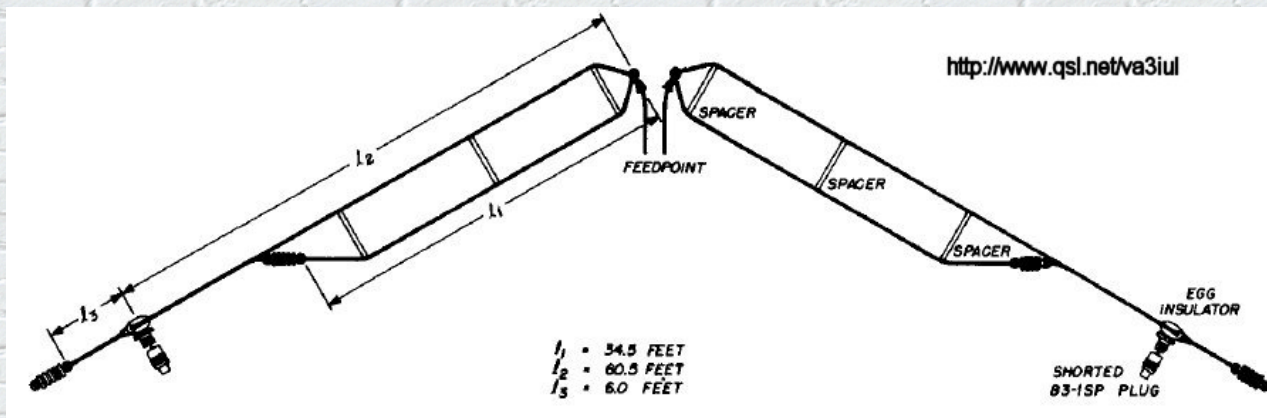
214 - Inverted-Vee Antenna with Bazooka Match



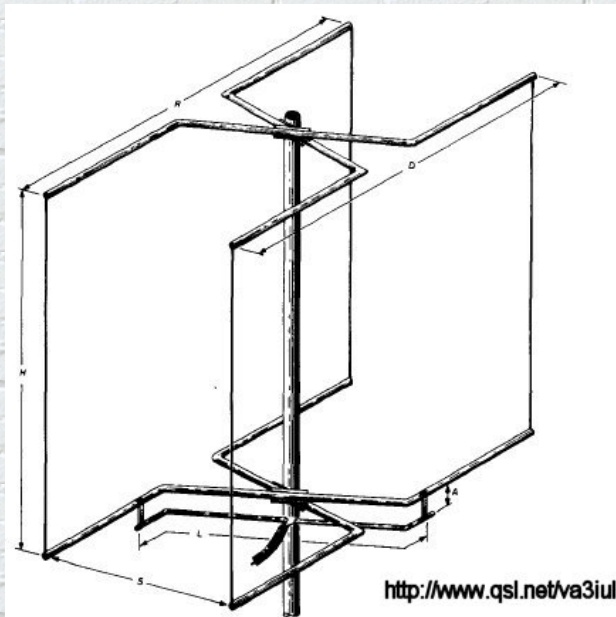
215 - Multiband Long Wire Antenna for 40m, 20m, 15m, 10m



216 - Converted Vee Antenna for 80m, 40m



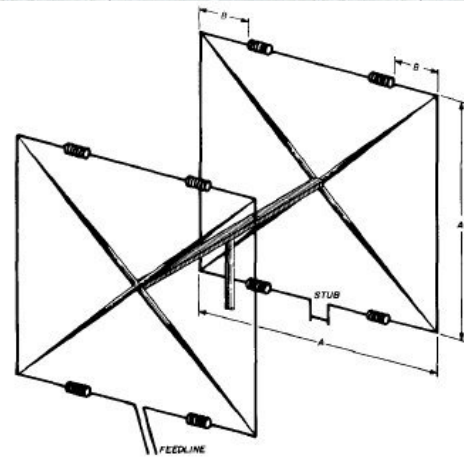
217 - Swiss Quad Antenna for 20m, 15m, 10m



Dimensions for the Swiss quad (in inches).

frequency (MHz)	reflector horizontal (R)	radiator horizontal (D)	vertical (H)	spacing (S)	gamma length (L)	gamma spacing (A)
14.05	248	223½	236	84	188½	4¼
14.2	245	221	233	83	186½	4¼
21.05	165	149	157	56	126	2½
21.2	162½	148	155½	55½	124½	2½
28.05	124	112	118	42	94½	2
28.5	122	110	116	41½	93	2

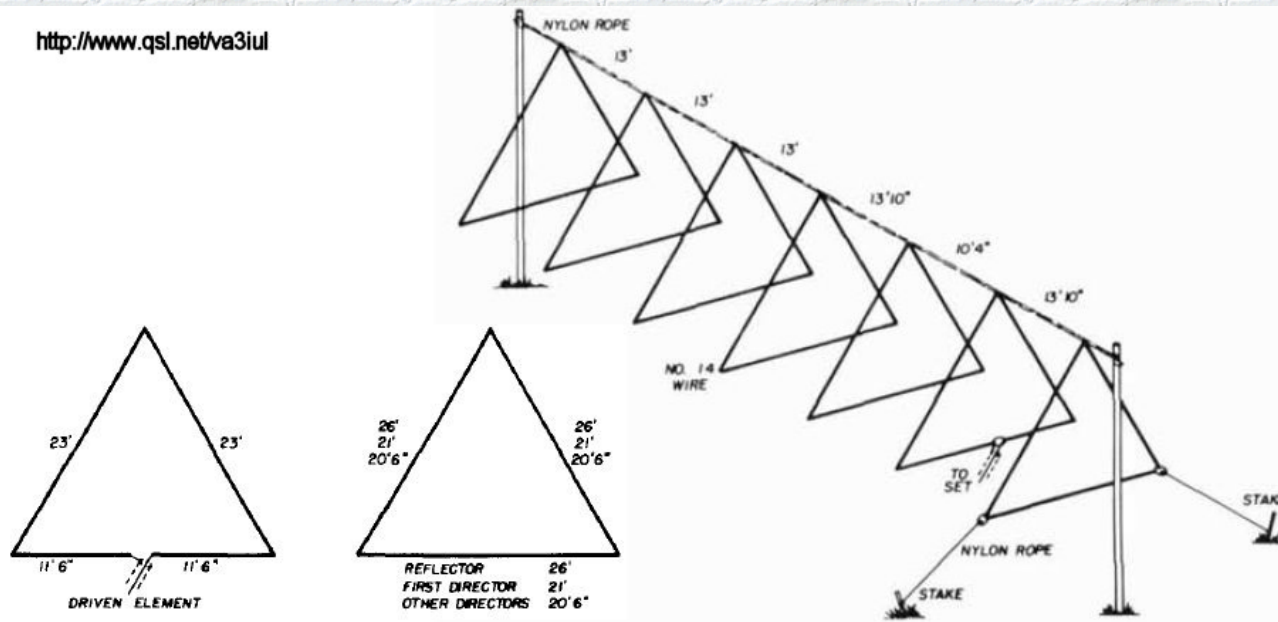
218 - Japanese Quad Antenna for 20m, 15m, 10m



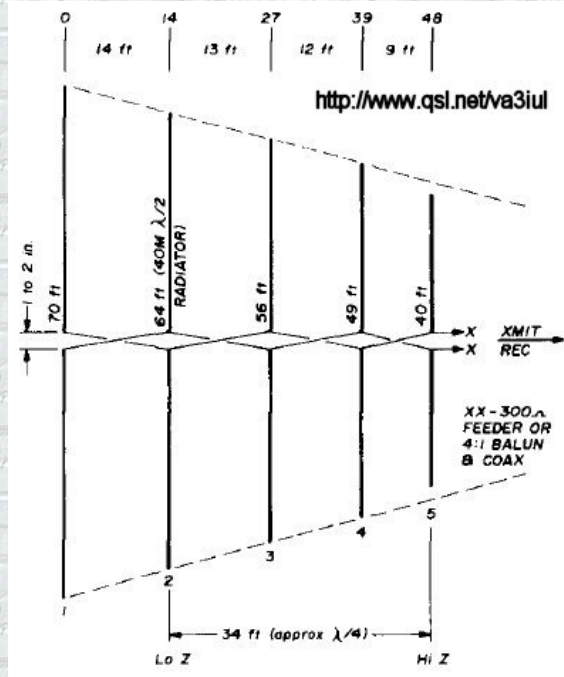
Construction details of the Japanese quad (in inches).

frequency (MHz)	quad side (A)	spacing	coil location (B)	coil (μ H)	winding info
14	152	101	38	3.0	17½ turns no. 14, 1½" diameter, 5" long
21	98	67	24½	2.0	11 turns no. 14, 1½" diameter, 3½" long
28	77	50	19¼	1.5	9½ turns no. 14, 1½" diameter, 3½" long

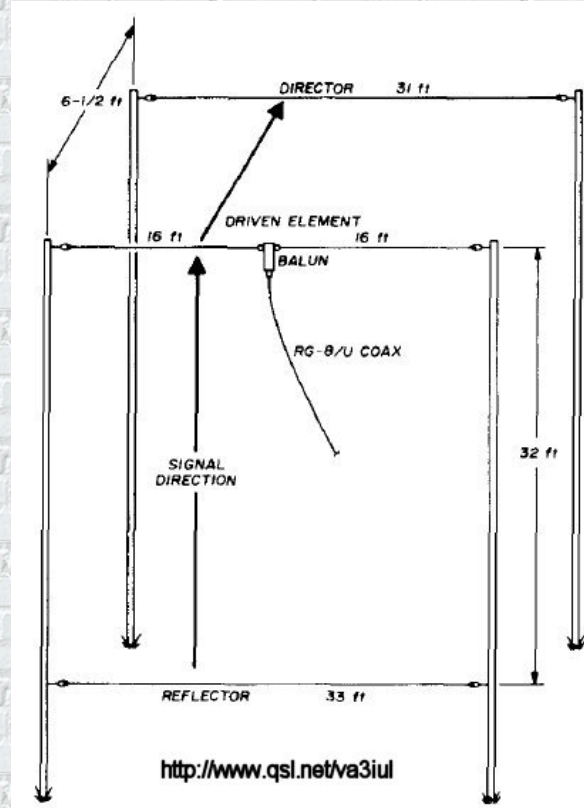
219 - Seven-Elements Triangle Beam Antenna for 20m



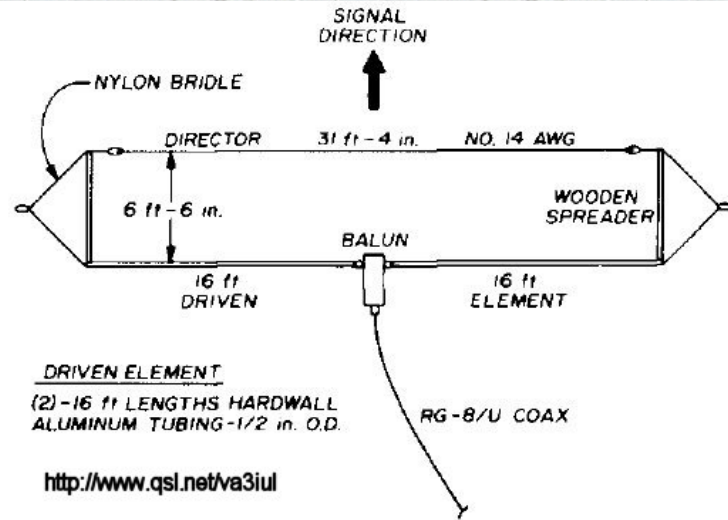
220 - Log Periodic Wire Antenna for 40m



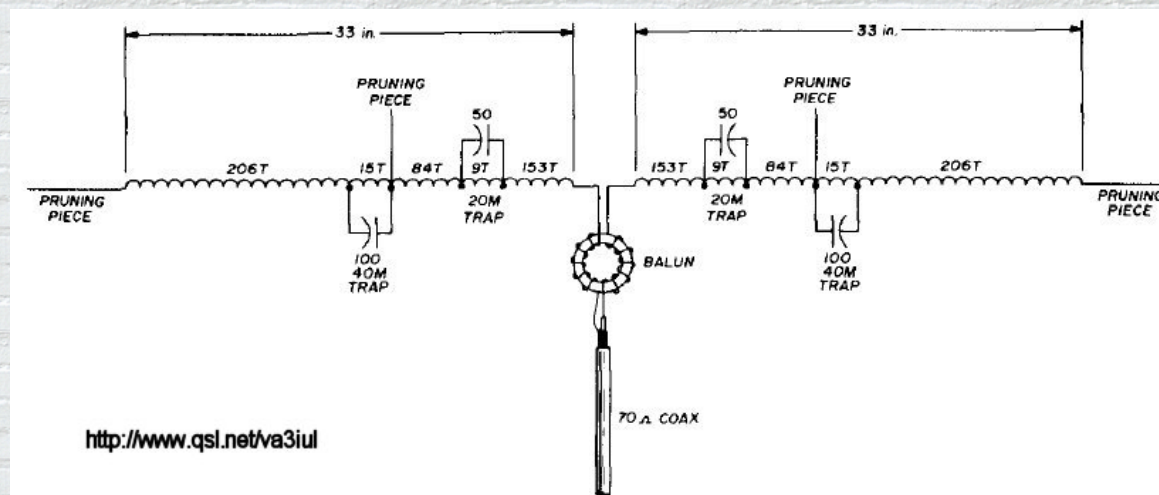
221 - Three-Elements 90-degree Wire Beam for 20m



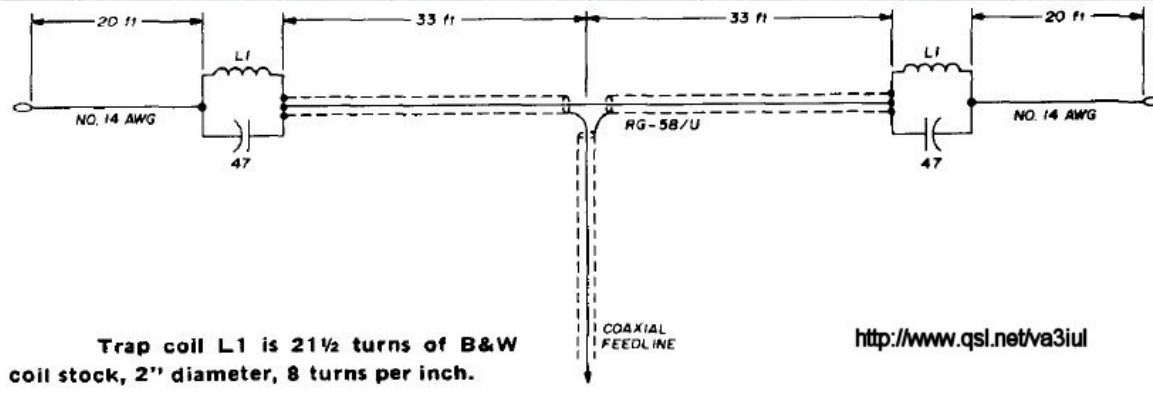
222 - Two-Elements Wire Beam for 20m



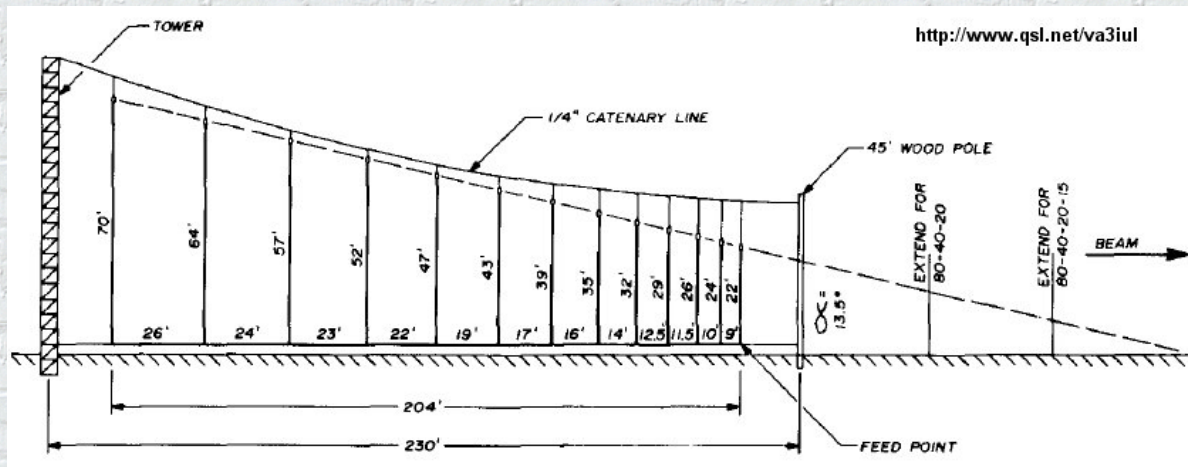
223 - Suitcase-Fit Dipole Antenna for 80m, 40m, 20m



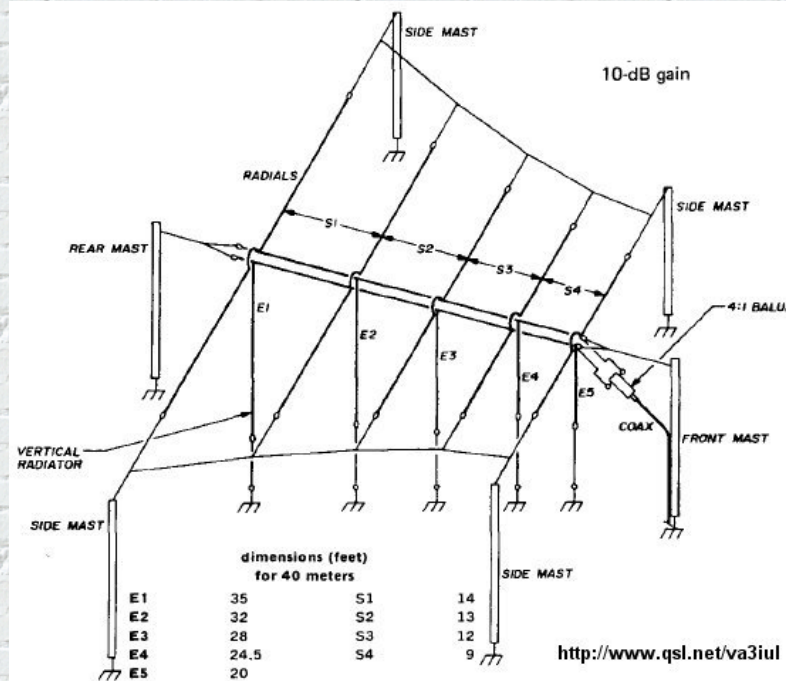
224 - Multiband Coaxial Dipole for 80m, 40m



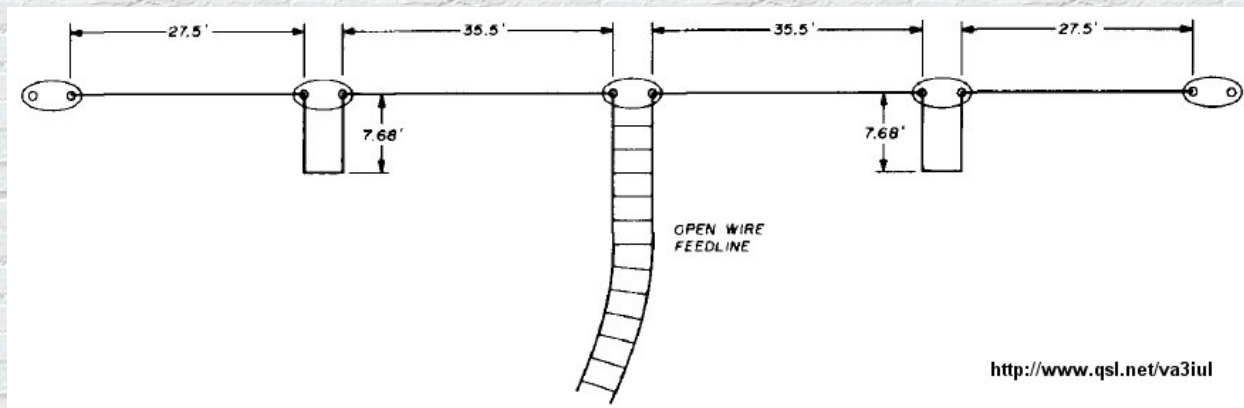
225 - Vertical Log Periodic Antenna for 80m, 40m



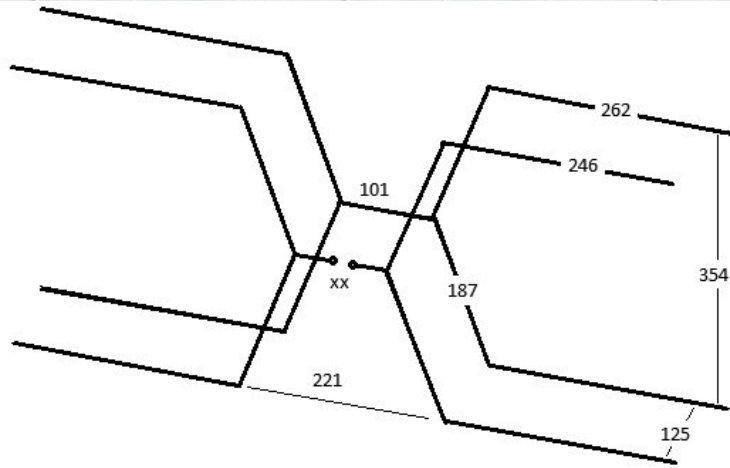
226 - Inverted Vertical Log Periodic Antenna for 40m



227 - Double Extended Zepp Antenna Gain=7dB for 15m



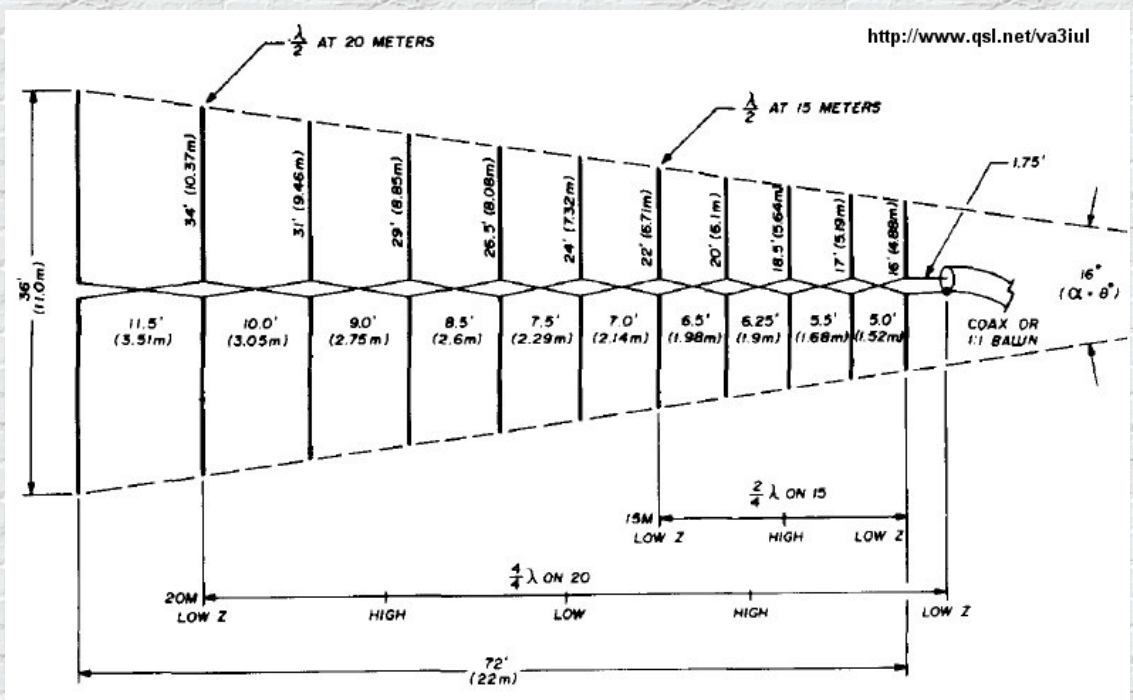
228 - Double Lazy-H Antenna G=10dB for 70cm



10.8 dBd 21 dB F/B
 xx - 50 Ohm, distance ~5mm
 SWR = 1 @ 435 MHz
 Material 3-5 mm dia aluminium

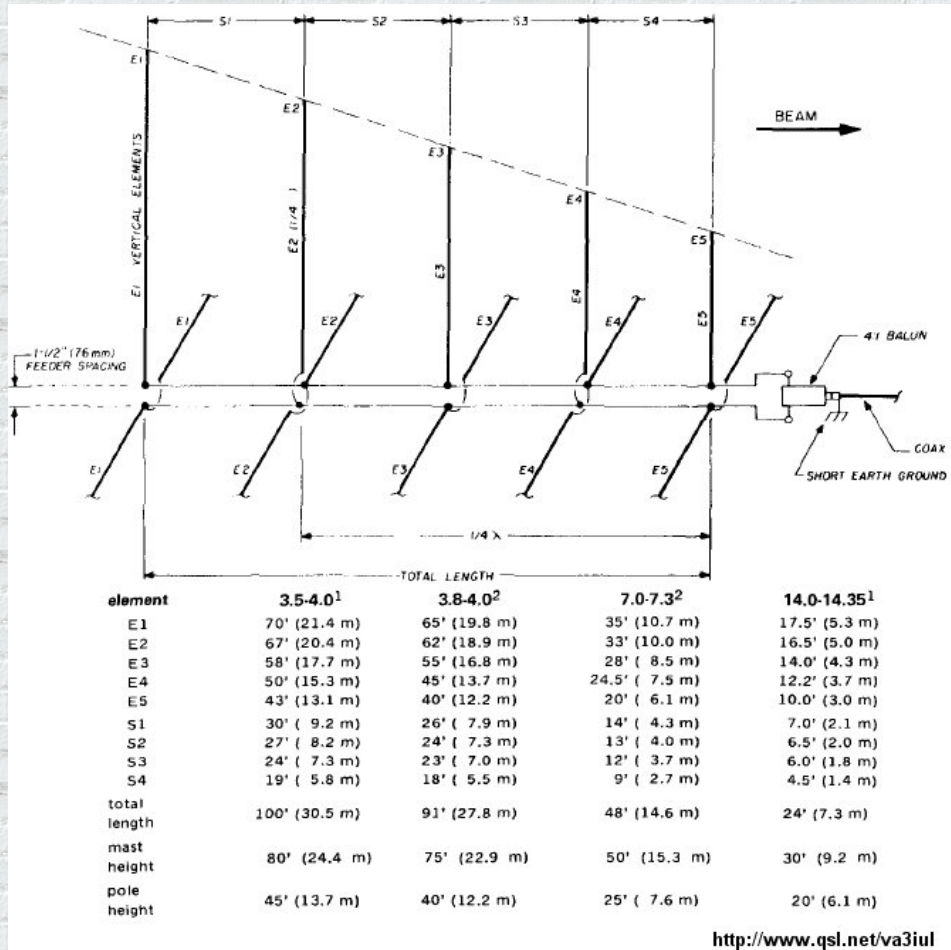
<http://www.qsl.net/va3iul>

229 - Wire Log Periodic Antenna G=12dB for 15m, 20m

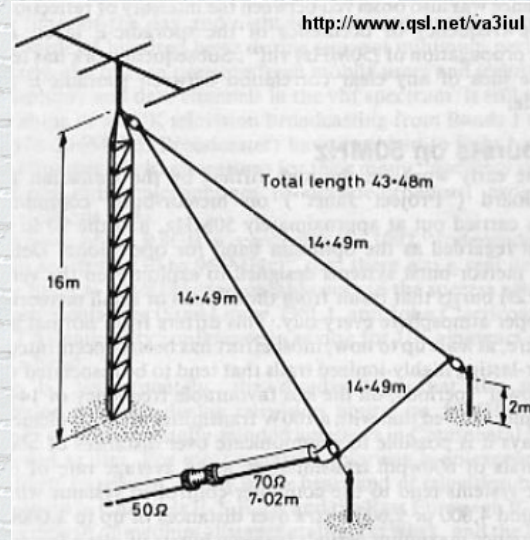


<http://www.qsl.net/va3iul>

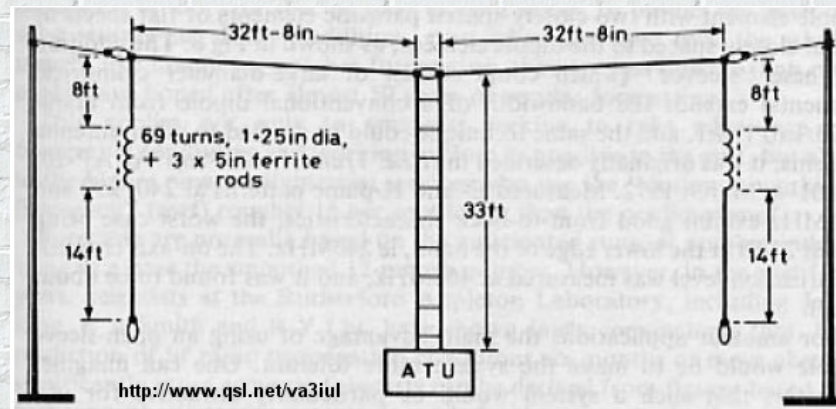
230 - Five-Elements Vertical Log Periodic for 80m, 40m, 20m



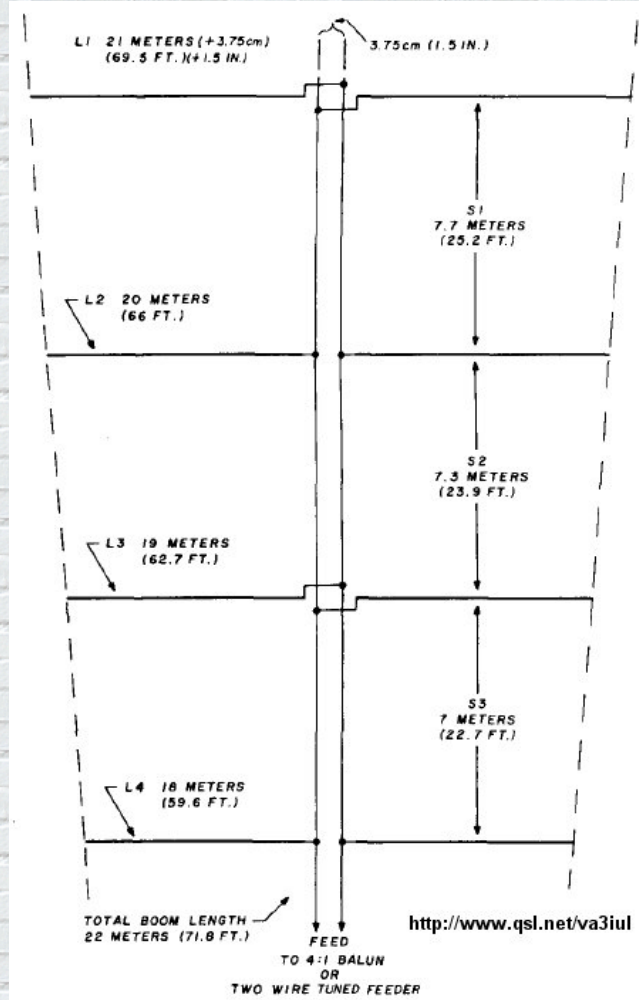
231 - Sloping Delta Loop Antenna for 40m



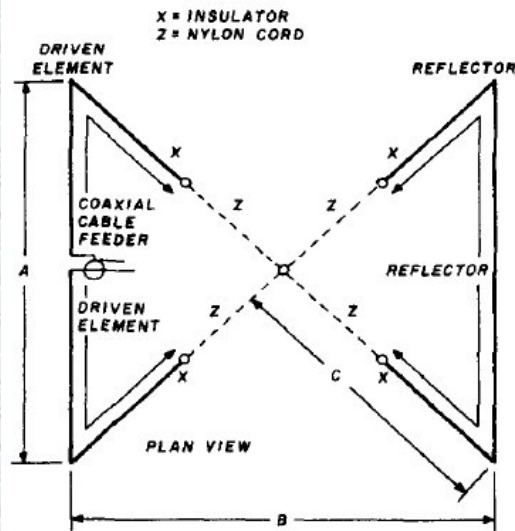
232 - Doublet Antenna for 160m



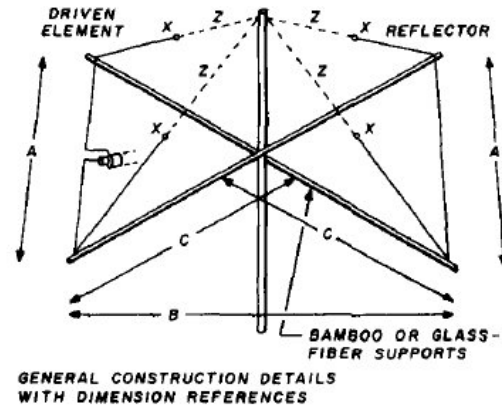
233 - Log Periodic Wire Beam for 40m



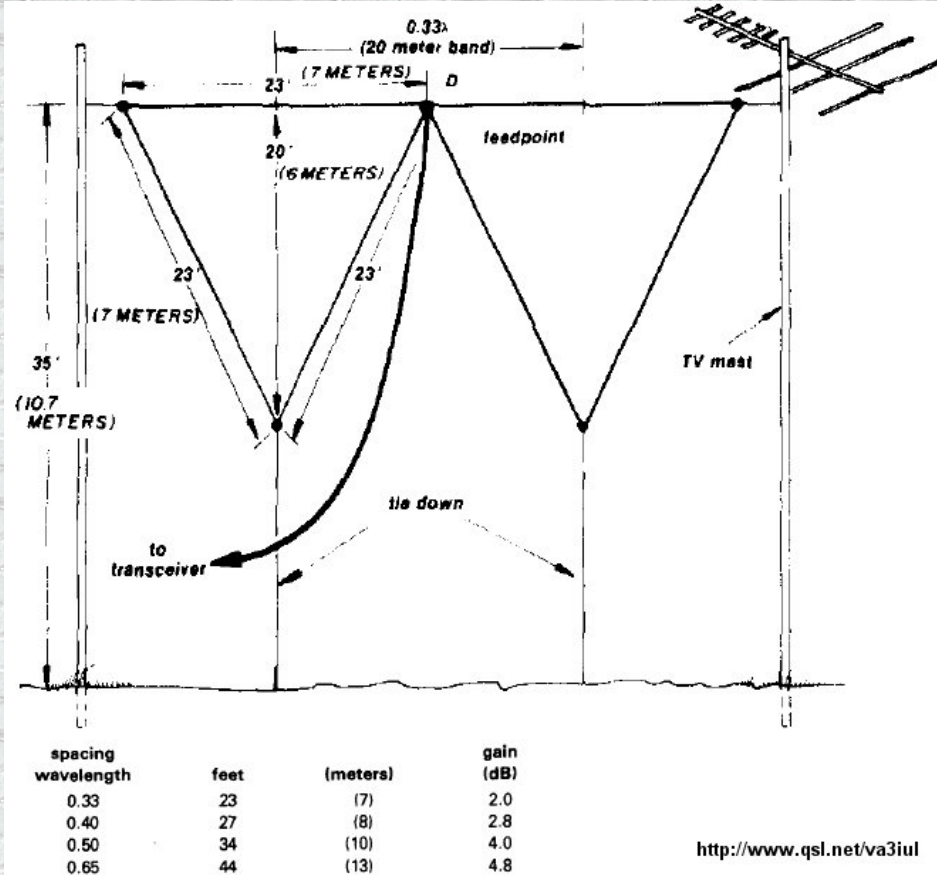
234 - G3LDO Wire Beam Antenna for 20m, 15m, 10m



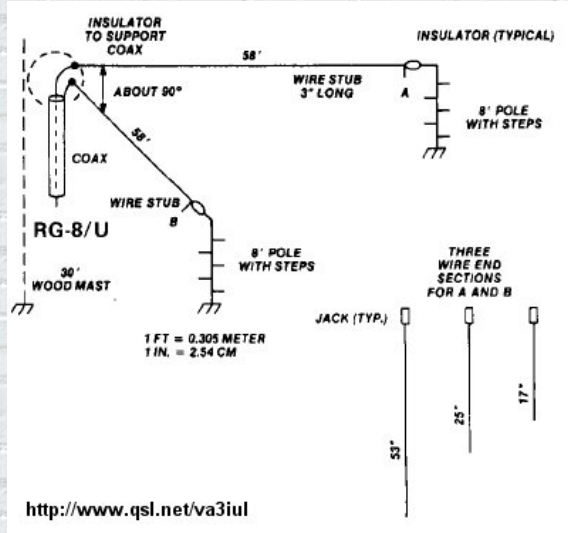
band	reflector	driven element	A	B	C	D
20	452	417	245	263	180	33
15	302	279	154	166	113	22
10	225	208	114	122	85	15



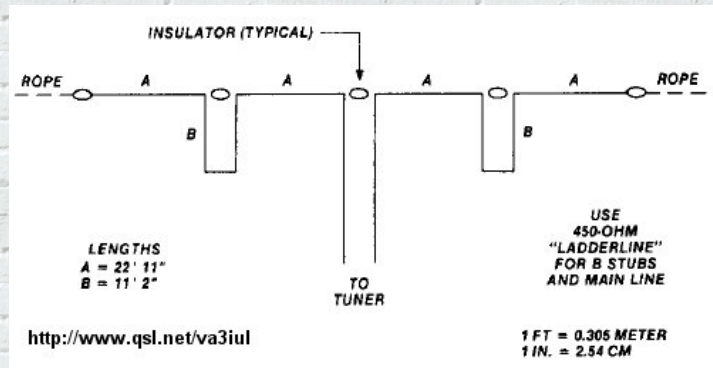
235 - Phased Delta Loop Array for 20m



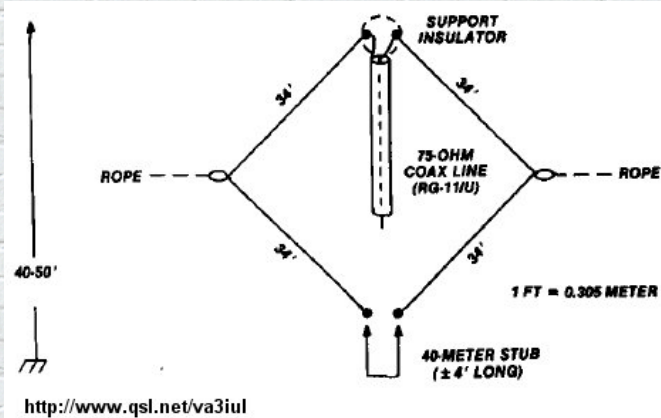
236 - Dual Band V-dipole for 80m, 40m



237 - Collinear Array 5dB-Gain for 15m

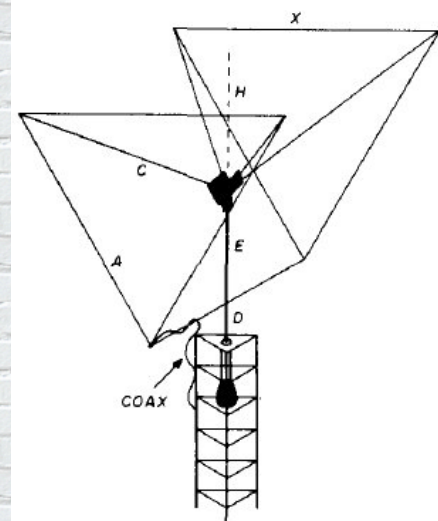


238 - Two-Band Quad Loop Antenna 80m, 40m



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239 - K7CW Quad Antenna



$$X = \frac{1030}{9.84F}$$

$$A = \frac{1005}{9.84F}$$

$$H = \frac{X}{2}$$

$$D = .2\lambda$$

$$E = \sqrt{X^2 - H^2} - H$$

$$C = \sqrt{2H^2 + \left(\frac{D}{2}\right)^2}$$

Where F = design frequency of antenna (3X = total distance around reflector loop).

3A = total distance around driven element loop.

= distance from main hub to top of antenna (the imaginary plane which contains the tips of all four spreaders).

where λ = wavelength at design frequency.

D = element spacing
= length of bottom spreader.

= distance from bottom spreader to main hub.

= distance from hub to where loop is attached to main spreader.

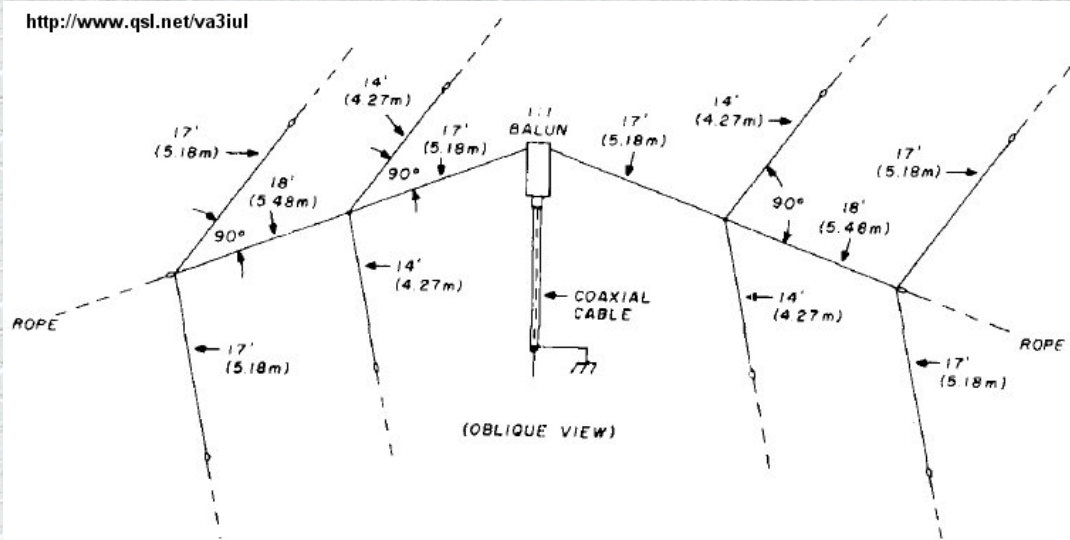
	antenna design frequencies (in meters)							
	3.575 MHz	3.8 MHz	7.05 MHz	7.2 MHz	14.075 MHz	14.25 MHz	21.1 MHz	
X	29.2722	27.5389	14.8437	14.5344	7.43503	7.34372	4.95962	
Y	87.8165	82.6168	44.5311	43.6033	22.3051	22.0312	14.8789	
A	28.5617	26.8705	14.4834	14.1817	7.25457	7.16547	4.83924	
B	85.685	80.6116	43.4502	42.5450	21.7637	21.4964	14.5177	
H	14.6361	13.7695	7.42184	7.26722	3.71751	3.67186	2.47981	
D	16.7832	15.7895	8.51064	8.33333	4.26288	4.21053	2.84360	
E	10.7144	10.0800	5.43317	5.31998	2.72141	2.68799	1.81535	
C	22.3349	21.0124	11.3258	11.0899	5.67298	5.60331	3.78423	
	21.3 MHz	28.15 MHz	28.6 MHz	29 MHz	50.05 MHz	50.125 MHz	53 MHz	
X	4.91305	3.71751	3.63902	3.60855	2.09087	2.08774	1.97449	
Y	14.7392	11.1525	10.9771	10.8257	6.27261	6.26322	5.92347	
A	4.79380	3.62728	3.57021	3.52097	2.04012	2.03707	1.92657	
B	14.3814	10.8818	10.7106	10.5629	6.12036	6.11120	5.77970	
H	2.45653	1.85876	1.82951	1.80428	1.04543	1.04387	.987245	
D	2.81690	2.13144	2.09790	2.06897	1.19880	1.19701	1.13208	
E	1.79830	1.36070	1.33929	1.32082	.765311	.764166	.722714	
C	3.74870	2.83649	2.79186	2.75335	1.59535	1.59296	1.50655	

Note: X = length of reflector loop side
Y = distance around reflector loop
A = length of driven element loop side
B = total distance around driven element loop
H = distance from hub to top of antenna

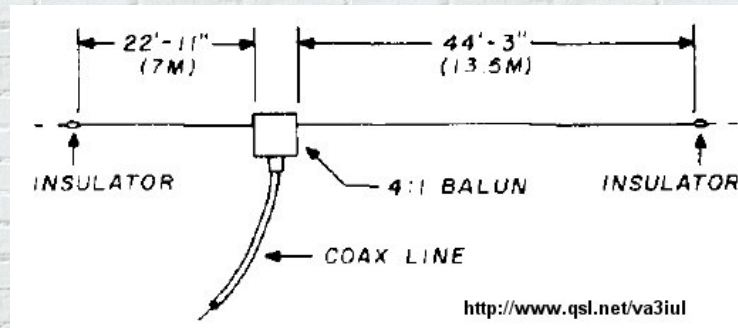
D = bottom spreader length
= element spacing
E = distance from bottom spreader to main hub
C = distance from hub to where loop is attached to main spreader, that is, spreader length

<http://www.qsl.net/va3iul>

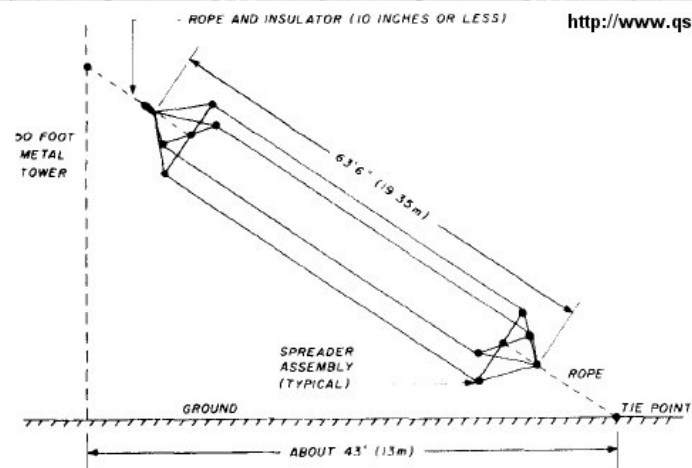
240 - Broadband Short Dipole for 80m



241 - Off-Center Fed Dipole for 40m, 20m, 10m

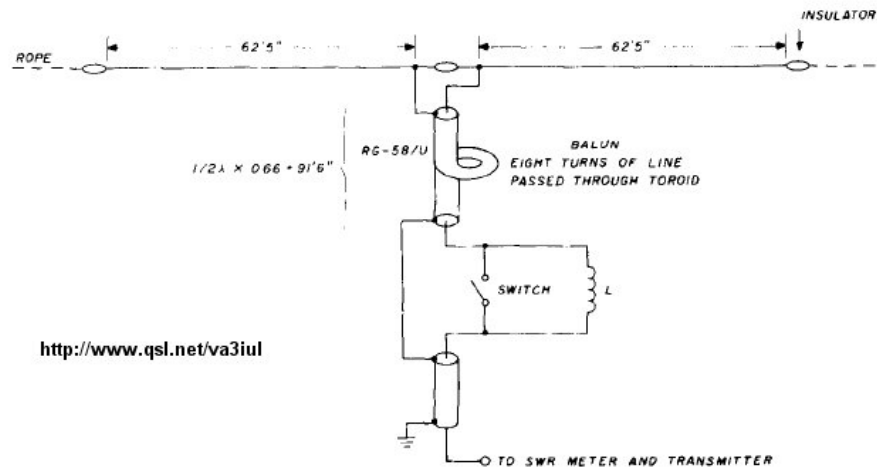


242 - Broadband Sloper Antenna for 80m



80-meter WD4FAB broadband sloper. Spreader assemblies are made of 36-inch long fiberglass tubes. The four antenna wires are tied together about 24 inches past each spreader assembly. A nylon line may be required from the crossover point of the spreader to the outer insulator to prevent bowing. The SWR plot of the antenna falls below 1.4-to-1 at 3.5 MHz; 1.25-to-1 at 3.8 MHz and 1.4-to-1 at 4.0 MHz. Feedpoint resistance of the antenna may be changed by altering the slope angle. The resonant frequency is adjusted by changing length — no climbing necessary!

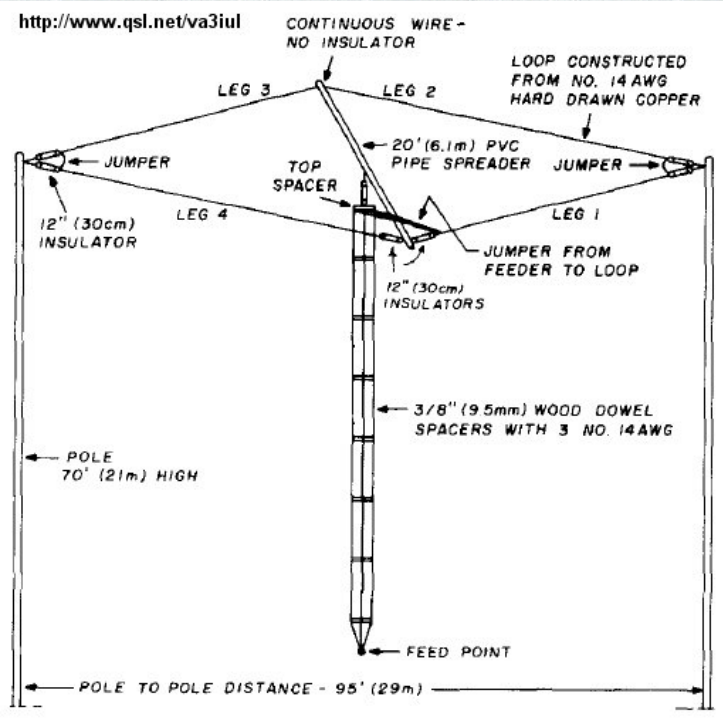
243 - Two-Frequency Dipole Antenna for 80m



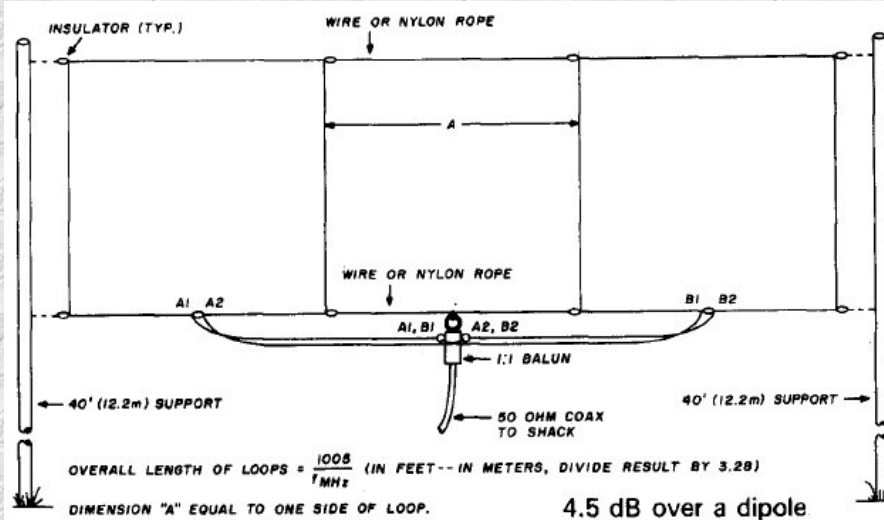
<http://www.qsl.net/va3iul>

The W6TC two-frequency dipole for 80 meters. Antenna is cut for resonance at high frequency end of band. A single loading coil for operation at the low frequency end of the band is placed an electrical half-wavelength down the transmission line. The line is decoupled from the antenna by a simple balun placed directly at the antenna insulator. Toroid is powdered iron material T-200 (2" OD) (1.25" ID), 2-mix (red, $\mu = 10$ (Amidon T-200-2), or equivalent).

244 - Top Loaded Vertical Antenna for 160m



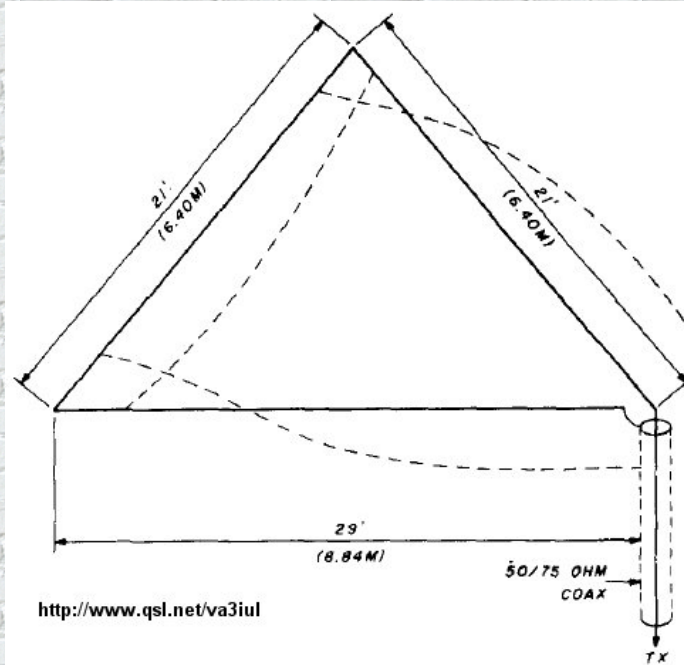
245 - Two Loop Beam Antenna for 20m, 15m



The W2TBZ loop beam. The phasing lines are made of 300-ohm TV line. Length of phasing line = $\frac{468}{f_{\text{MHz}}} \times \text{velocity factor of 300-ohm line}$. Balun is supported at center of lower nylon rope.

<http://www.qsl.net/va3iul>

246 - Corner-Fed Delta Loop Antenna for 80m, 40m, 20m

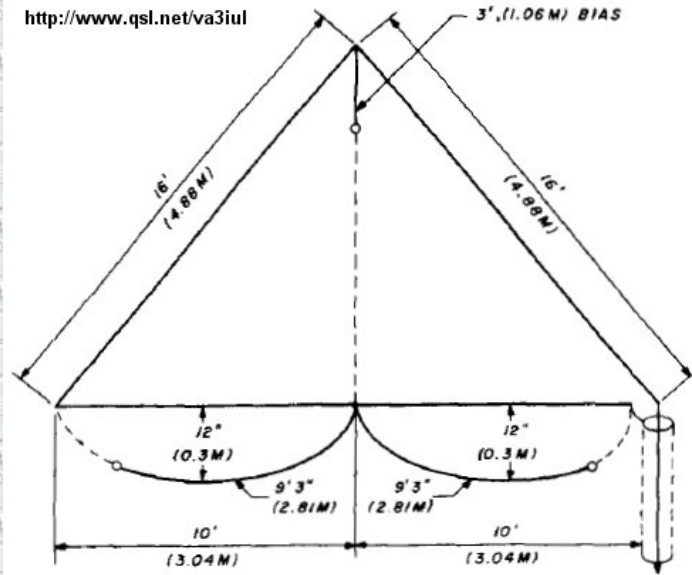


<http://www.qsl.net/va3iul>

DIMENSIONS FOR FULL-SIZE CORNER-FED DELTA LOOPS

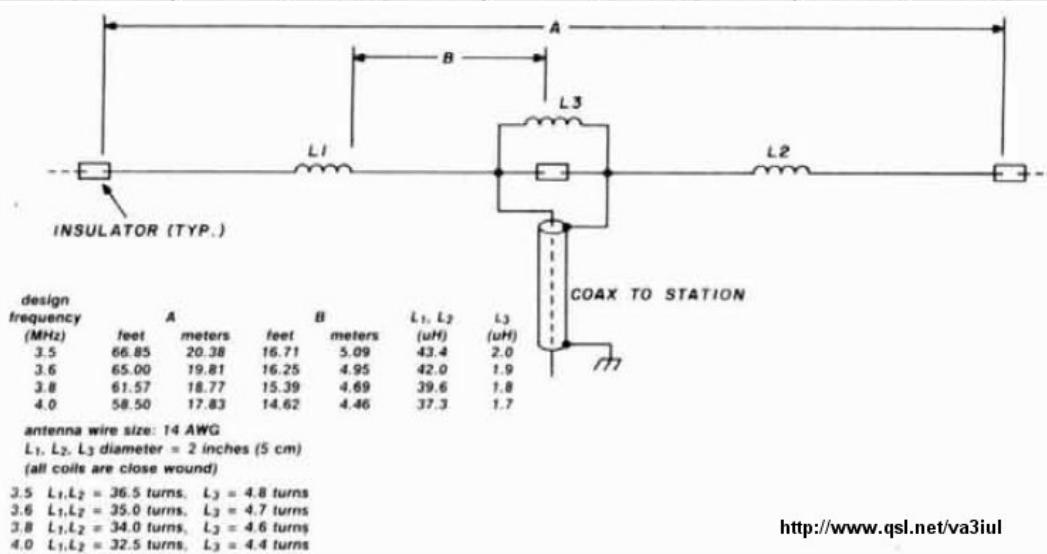
frequency (MHz)	total loop circumference		length of each side		length of base	
	(feet)	(meters)	(feet)	(meters)	(feet)	(meters)
3.800	279 ft. 2 in.	(85.09)	82 ft.	(24.99)	115 ft. 2 in.	(35.10)
7.075	142 ft. 0 in.	(43.28)	42 ft.	(12.80)	58 ft. 0 in.	(17.68)
14.150	71 ft. 0 in.	(21.64)	21 ft.	(6.40)	29 ft. 0 in.	(8.84)

247 - Loaded Delta Loop Antenna for 40m, 20m

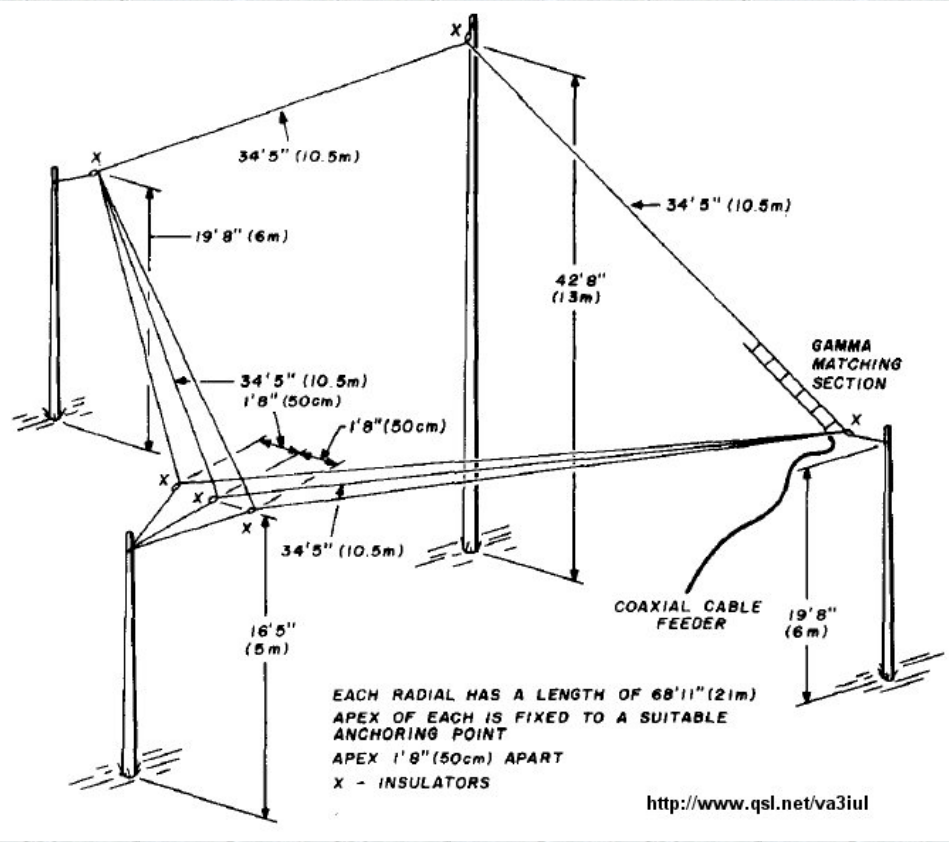


The final loaded loop for 14 MHz. All dimensions are doubled for operation on 7 MHz. Base loading wires are each 18 feet 4 inches (5.59 meters). The top loading wire is made taut by securing to base with thin light nylon cord.

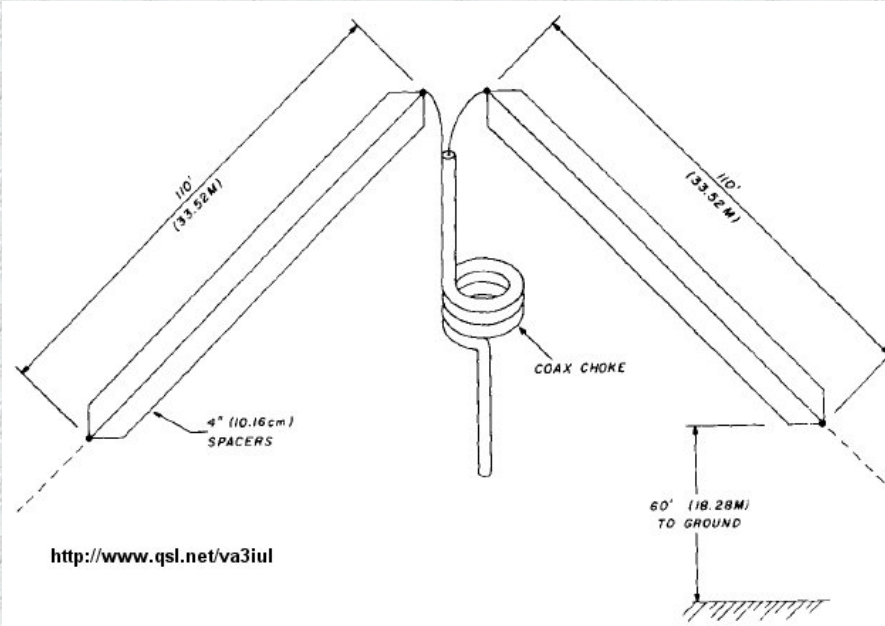
248 - Compact Size Dipole for 80m



249 - JAWS 3dB Gain Antenna for 40m



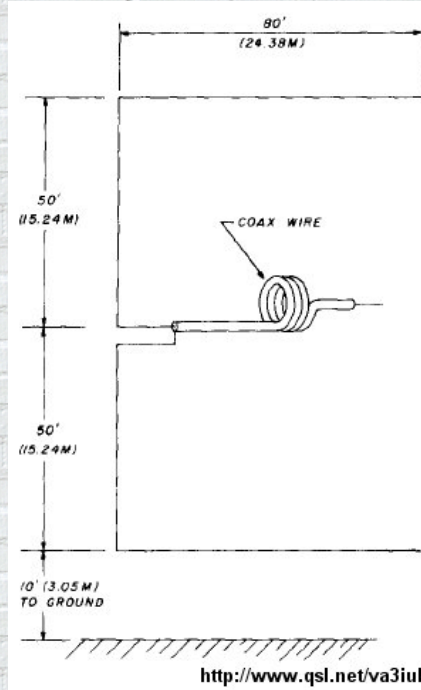
250 - Inverted-V Antenna for 160m



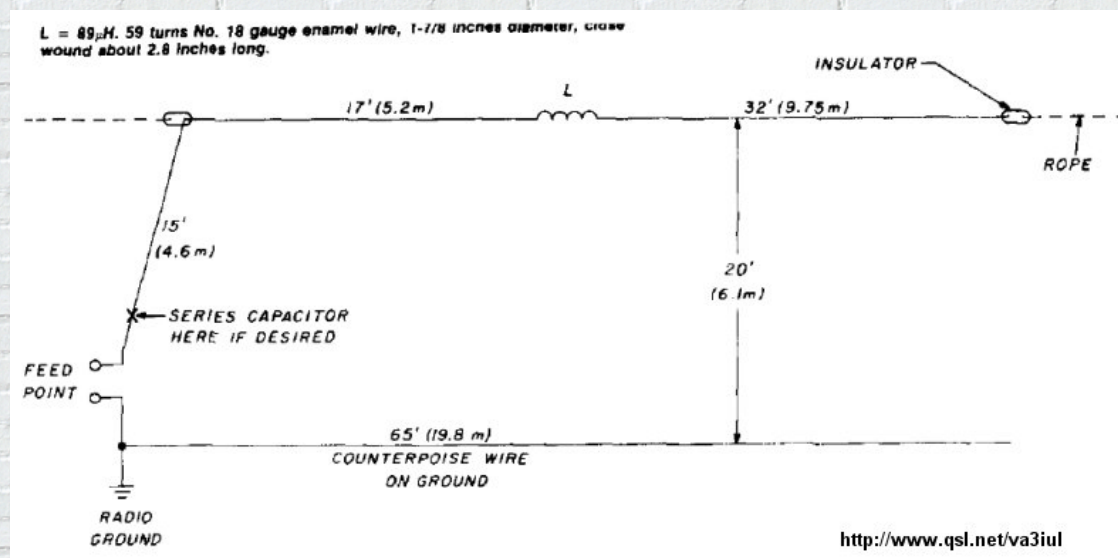
<http://www.qsl.net/va3iul>

The inverted-V antenna for 160 meters at VE7BS. Wires all lie in the same plane. Apex is at 105 feet (32 meters).

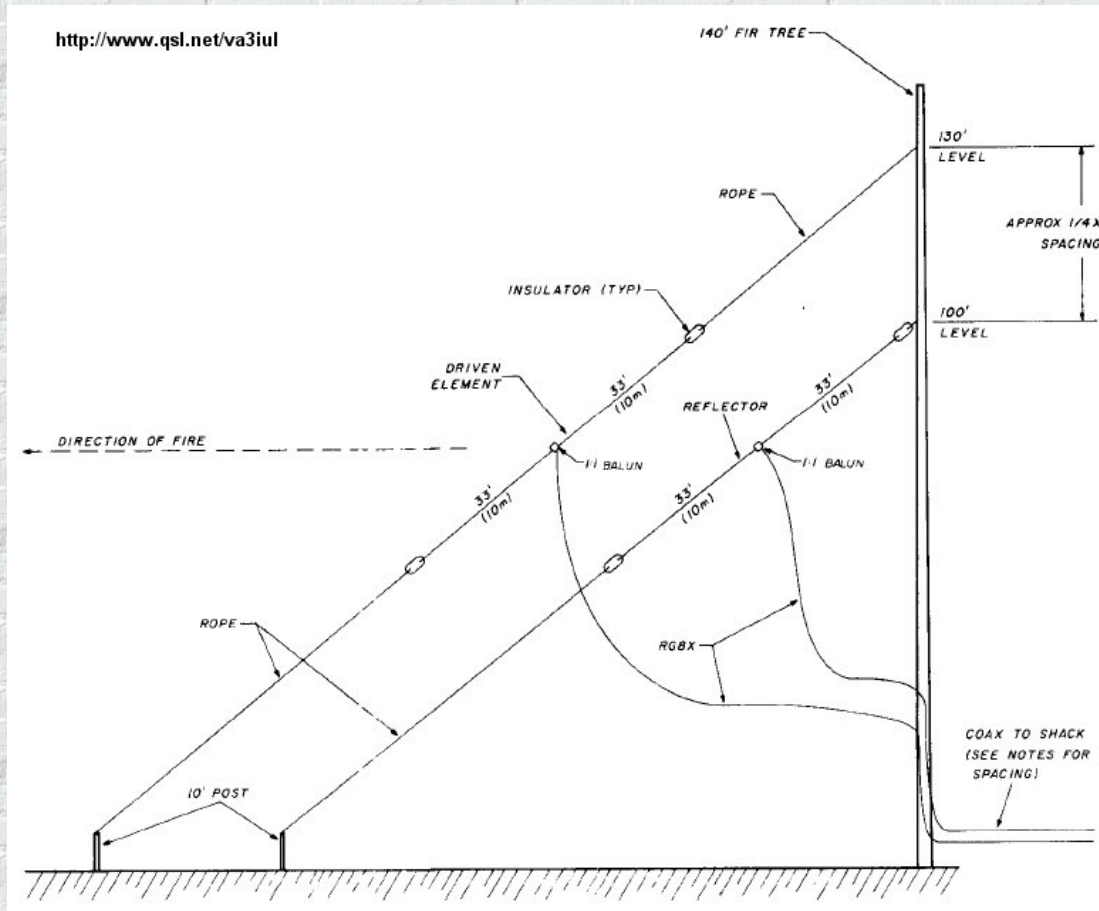
251 - Lazy-U Antenna for 160m



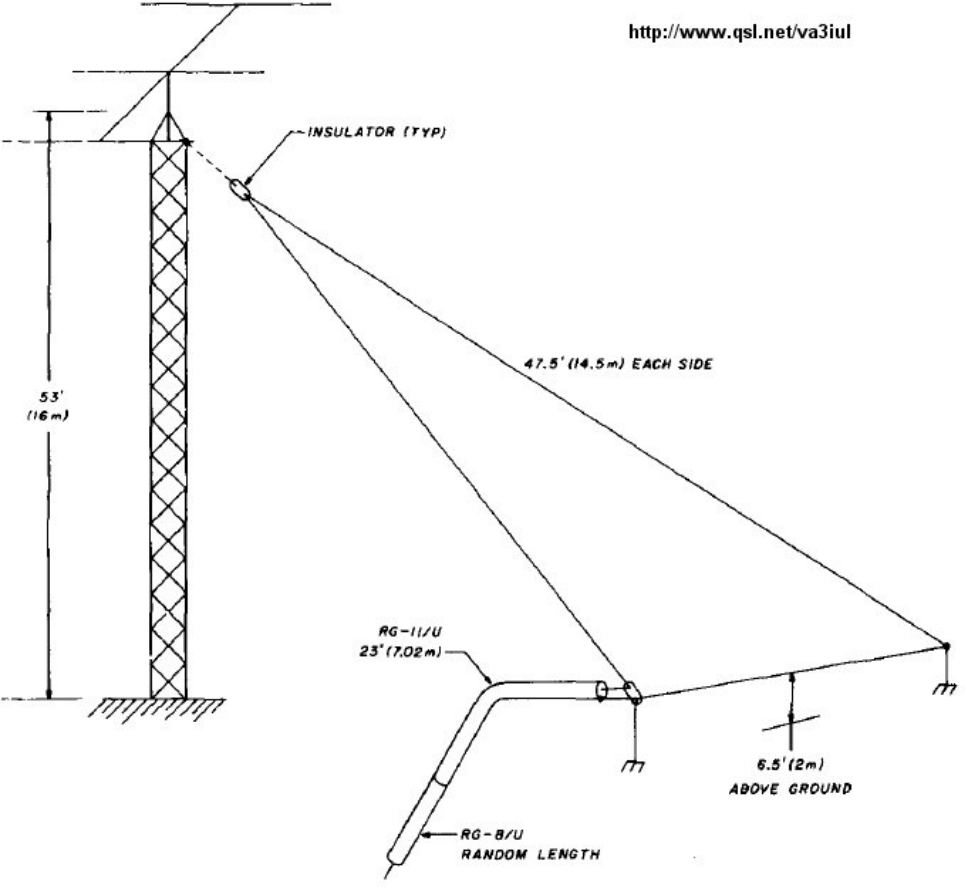
252 - AF3V Compact Antenna for 160m



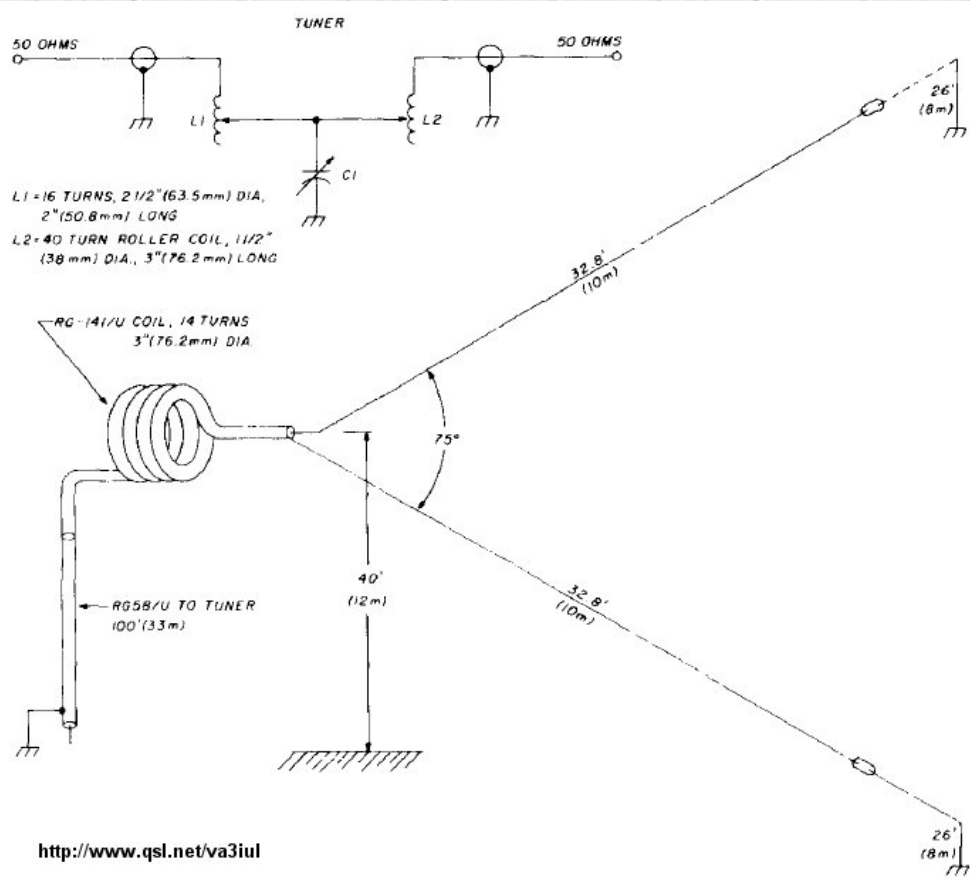
253 - Hot Beam Wire Antenna for 40m



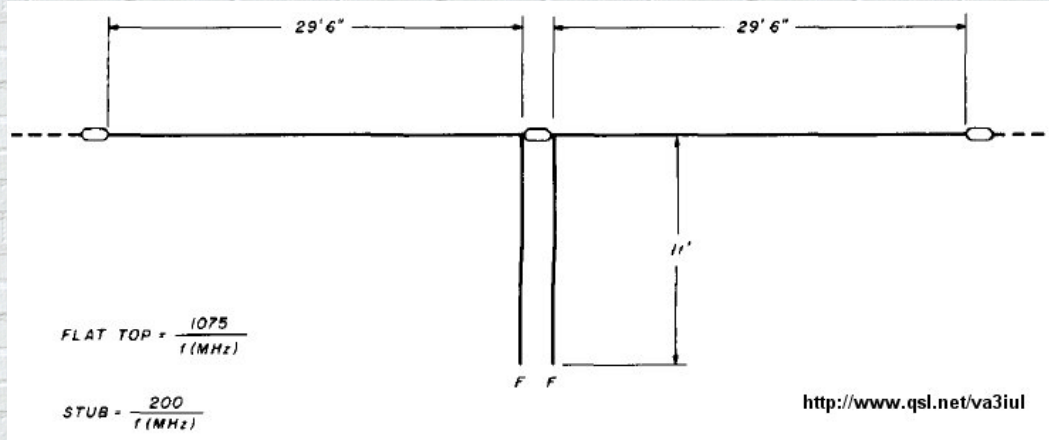
254 - Sloping Delta Loop for 40m



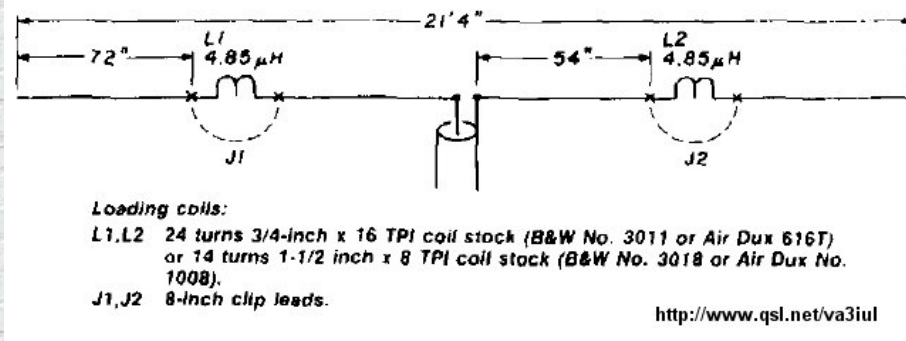
255 - K6FD Multiband Antenna with T-tuner



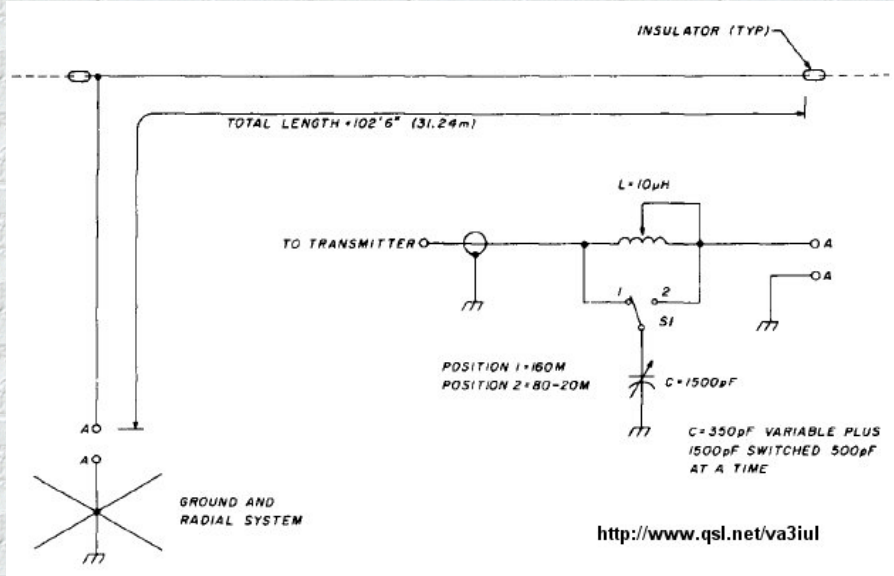
256 - Dual Band Dipole Antenna for 17m, 10m



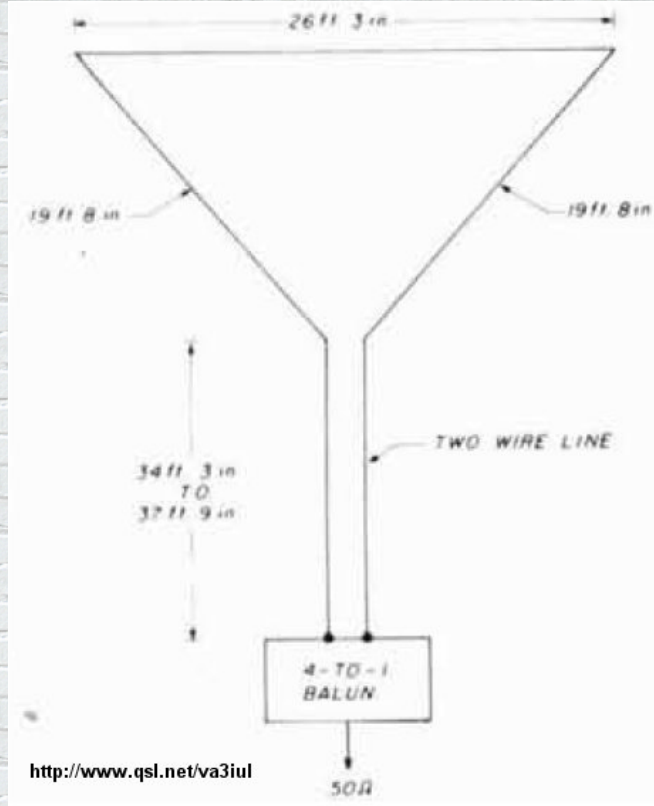
257 - Compact Travel Dipole Antenna for 10m, 15m, 20m



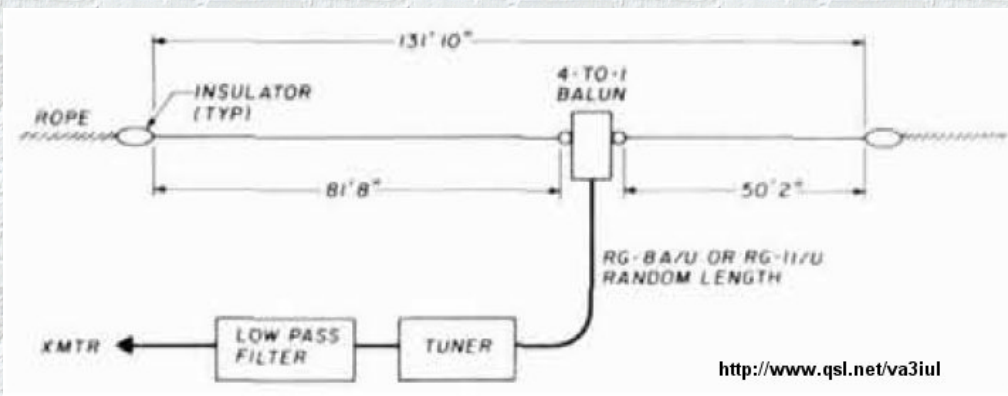
258 - End-Fire Antenna for 160m, 80m, 40m, 20m



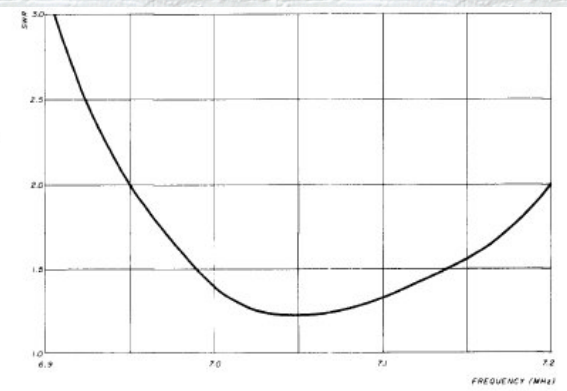
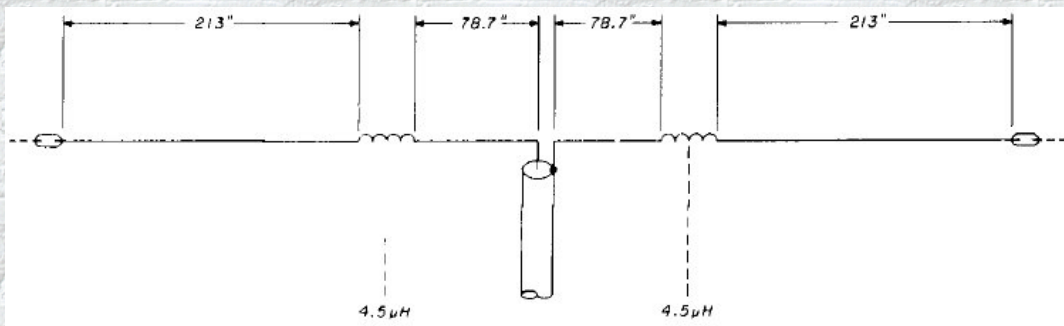
259 - Four Band Loop for 40m, 20m, 15m, 10m



260 - Carolina Window Antenna for 80 to 10m

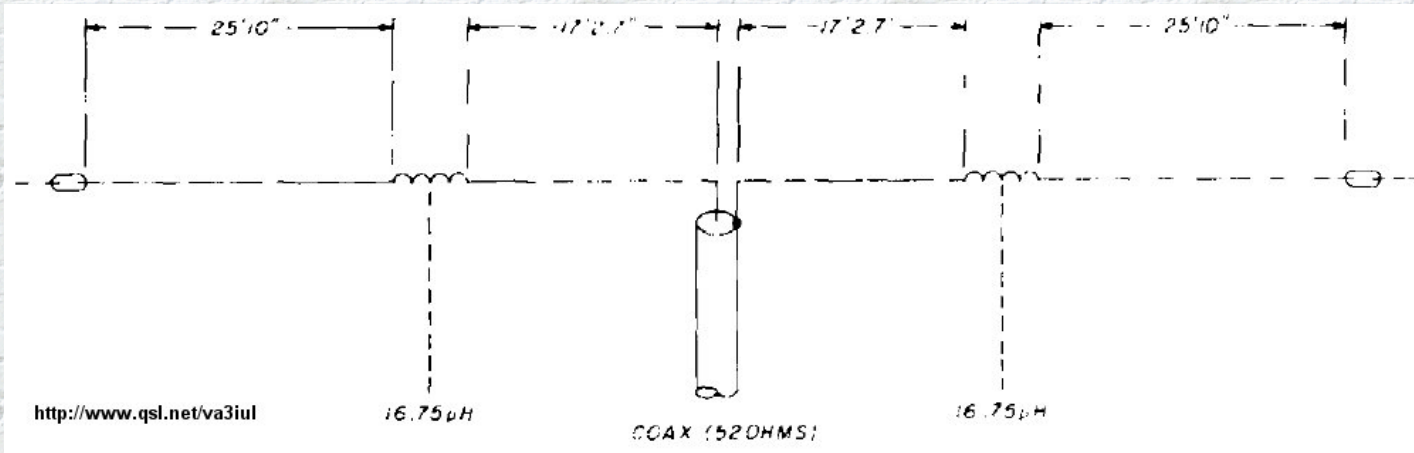


261 - Shortened Loaded Dipole for 40m



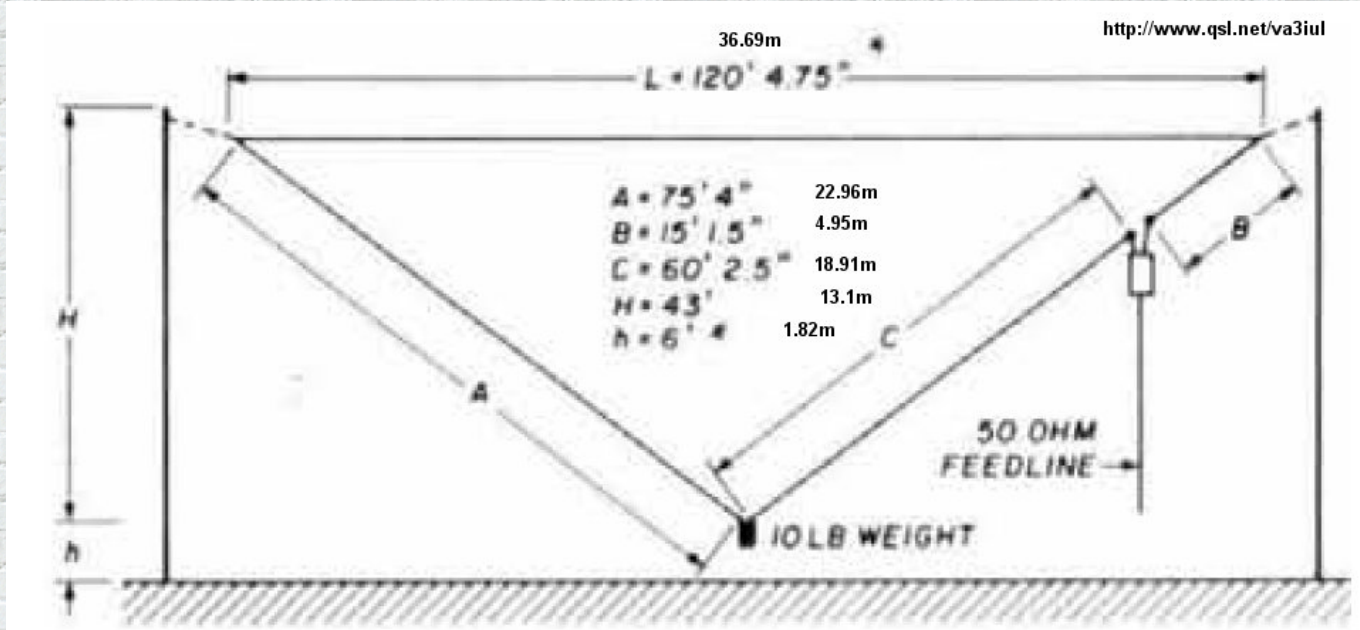
<http://www.qsl.net/va3iul>

262 - Shortened Loaded Dipole for 80m

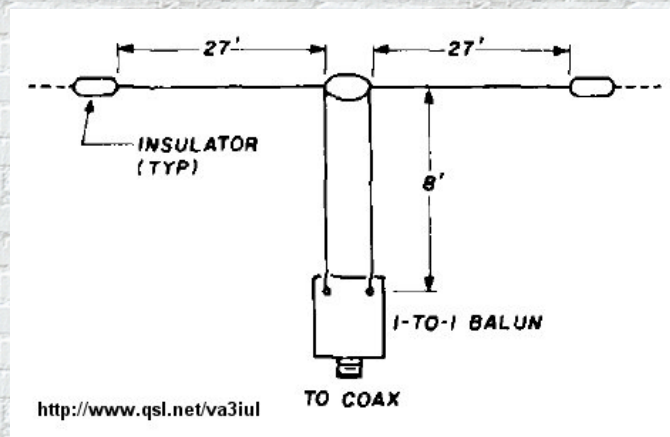


<http://www.qsl.net/va3iul>

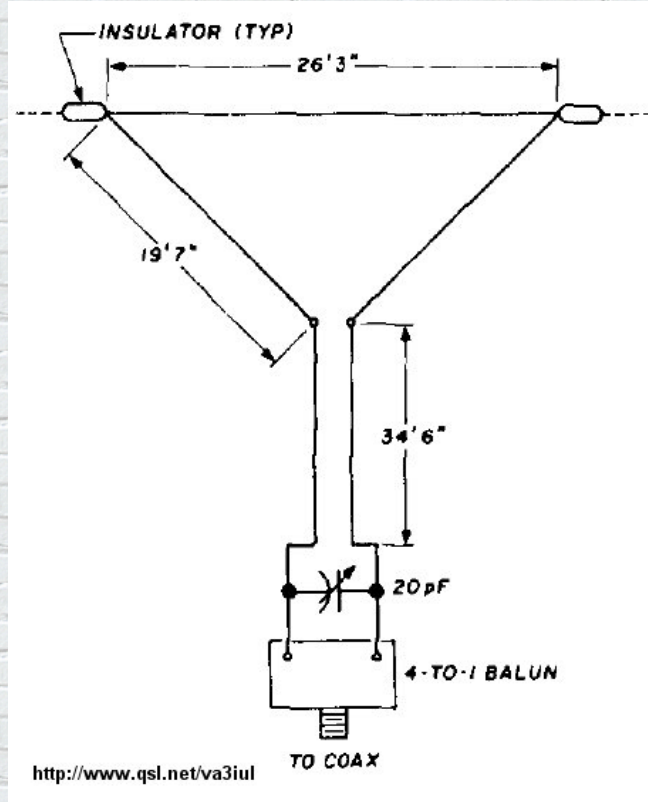
263 - Low Radiation Angle Inverted Delta Loop for 80m



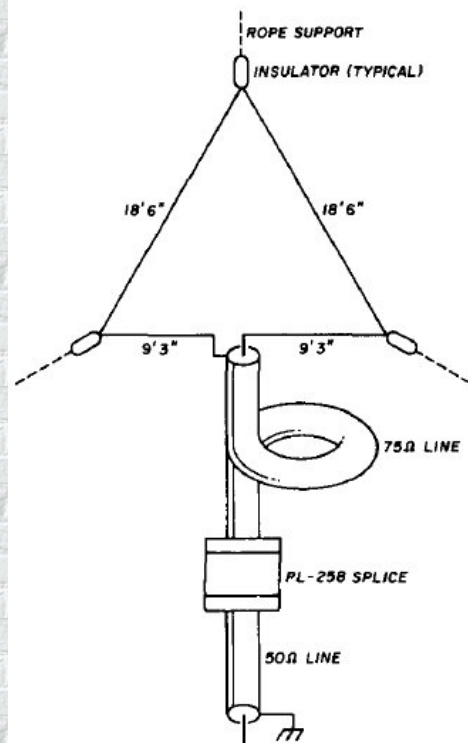
264 - Compact Dipole Antenna for 40m, 15m



265 - Vertical Delta Loop for 40m to 10m

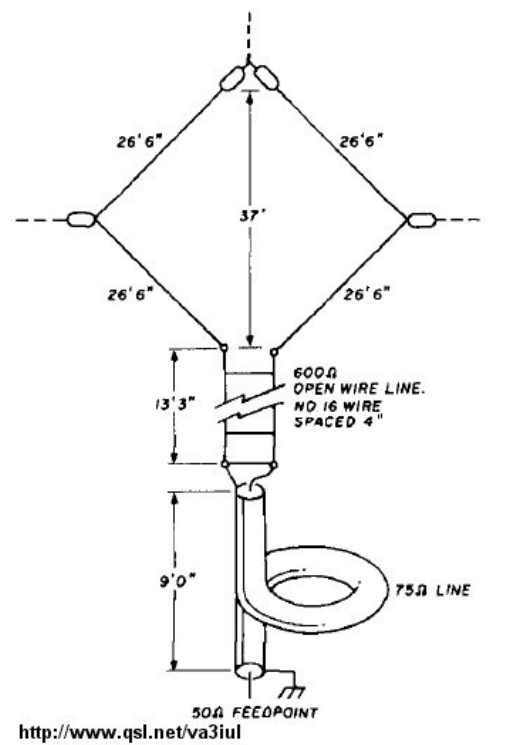


266 - Delta Loop Antenna for 17m



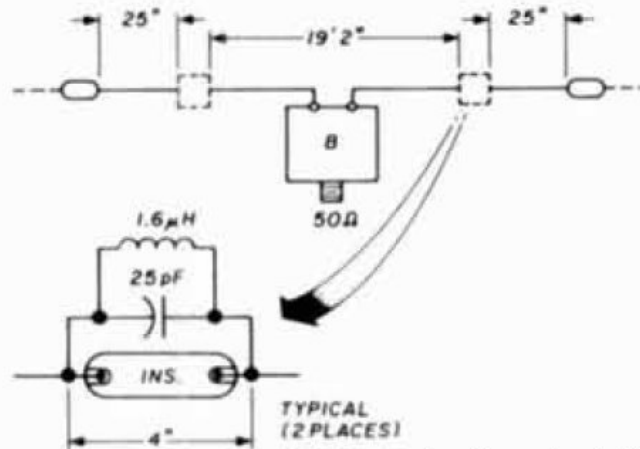
<http://www.qsl.net/va3iul>

267 - Bi-Square Beam Gain=3dBd for 17m



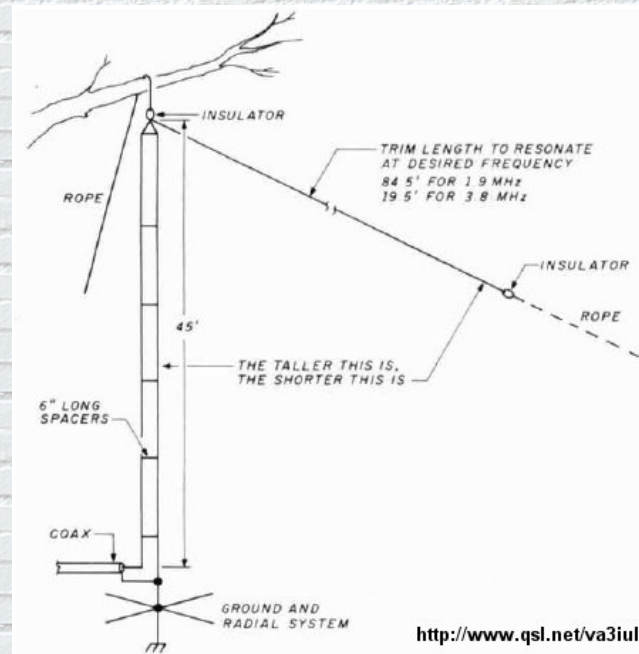
<http://www.qsl.net/va3iul>

268 -Trap Dipole Antenna for 17m,13m

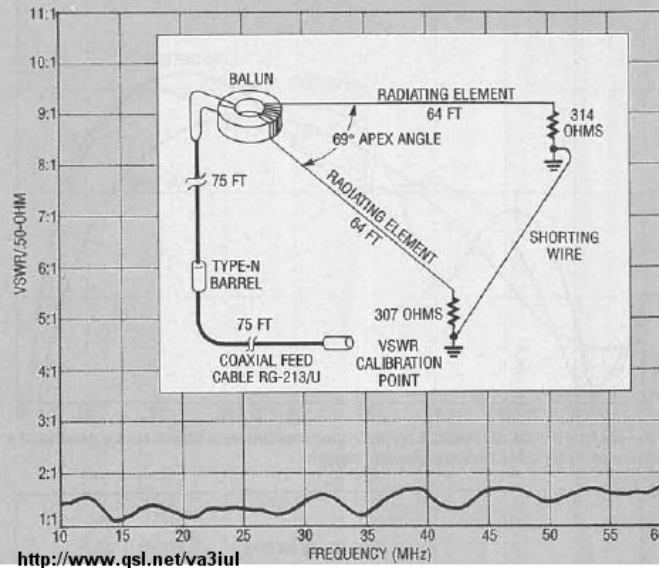


<http://www.qsl.net/va3iul>

269 - Hanging Unipole Antenna for 160m, 80m

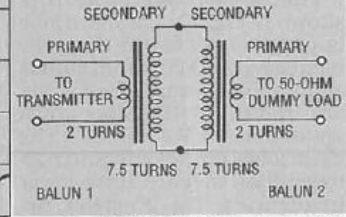


270 - Wideband Sloping Vee Antenna - 30m to 6m



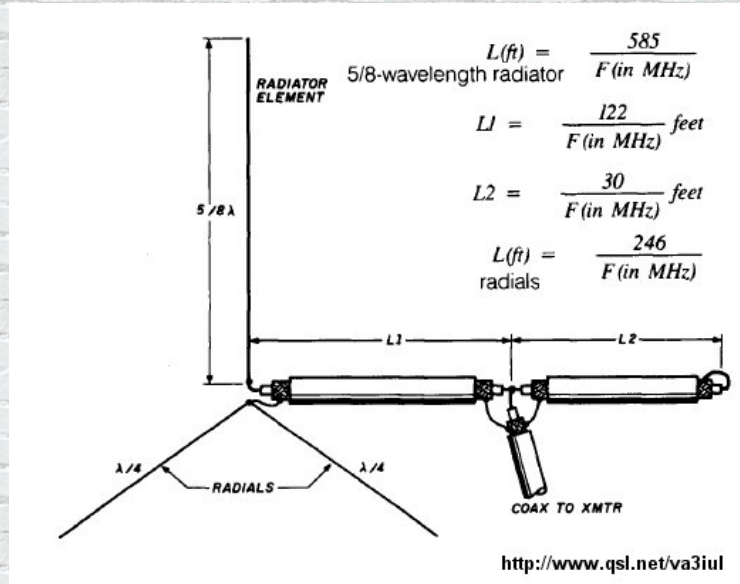
<http://www.qsl.net/va3iul>

- SOURCES OF MATERIALS**
 The following companies are sources for materials and computer software for this project:
- Toroidal ferrite cores (Part No. FT240-43)—Radio Kit, Inc., P.O. Box 973, Pelham, NH 03076, (603) 635-2235
 - Film power resistors—Power Film Systems, Inc., Yellville, AR 72687, (501) 449-4091
 - Antenna design software—Phadean Engineering Co., Inc., P.O. Box 611, Shrewsbury, MA 01545, (508) 869-6077
 - Phosphor-bronze wire—Astro Industries, Inc., Dayton, OH 45432, (600) 543-5810
 - Fiberglass tubing—J. T. Ryerson Co., P. O. Box 1111, Boston, MA 02103, (617) 782-6900



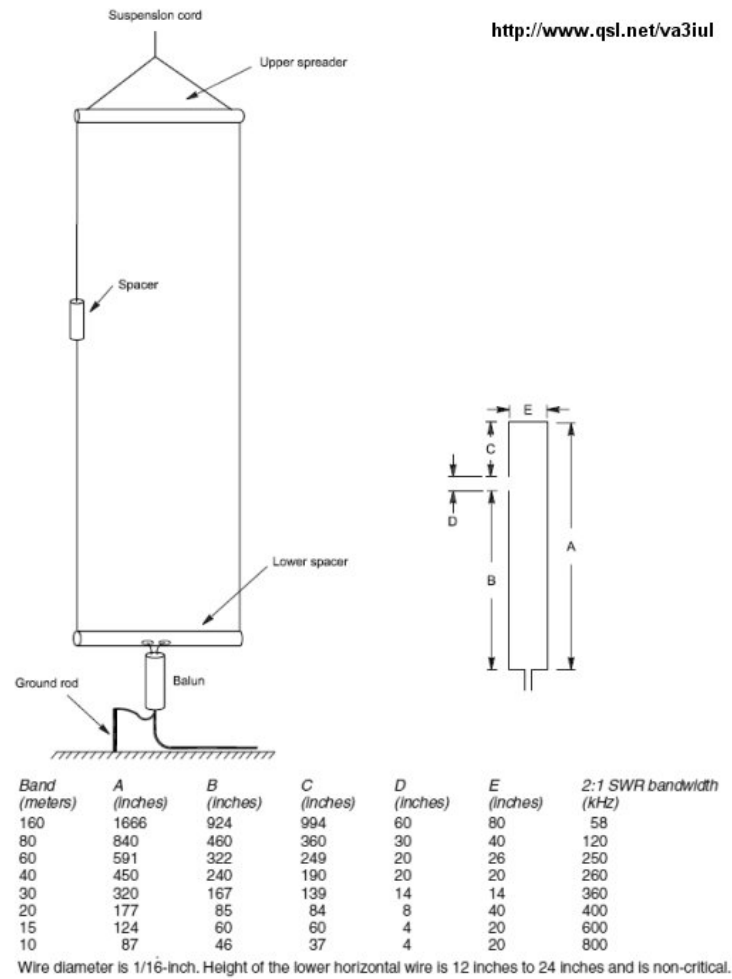
-BACK-TO-BACK INSERTION LOSS TEST of baluns for sloping-vee antenna.

271 - 5/8 Wavelength Antenna

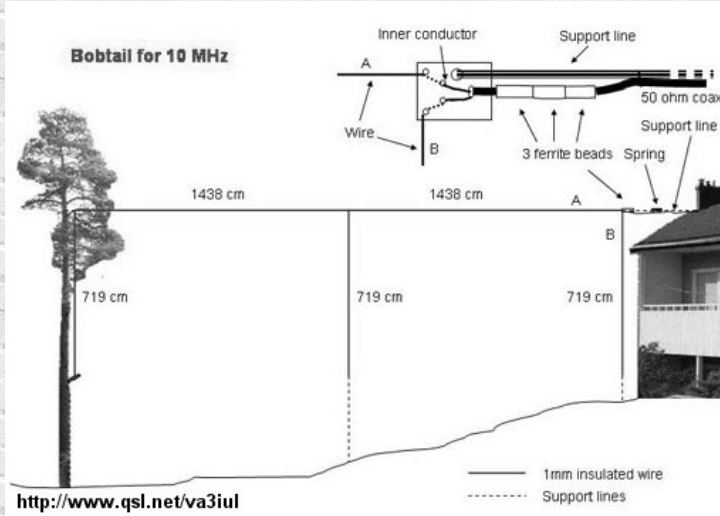


<http://www.qsl.net/va3iul>

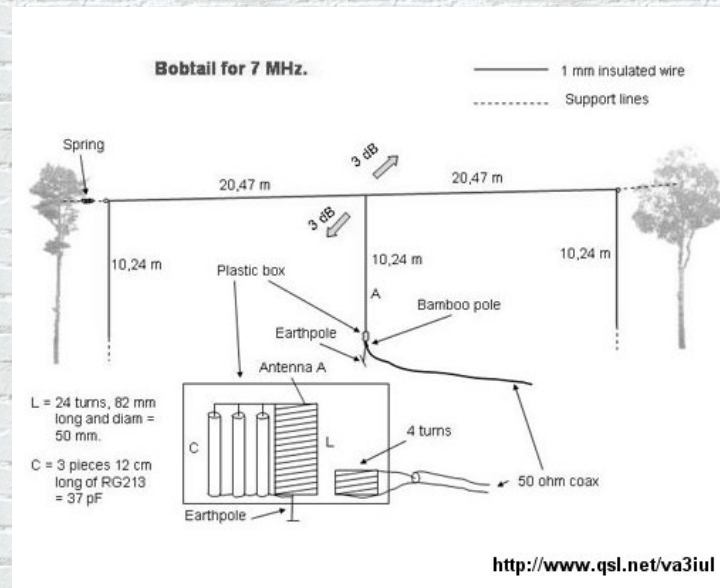
272 - C-Pole Vertical Antenna



273 - Bobtail Antenna for 30m

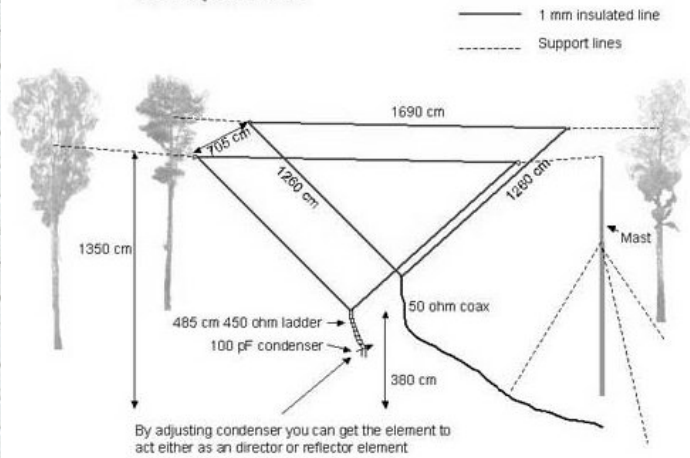


274 - Bobtail Antenna for 40m



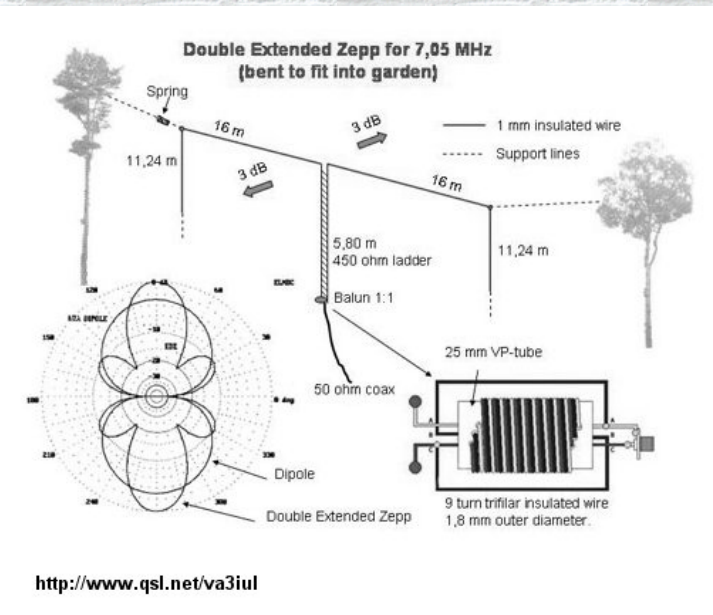
275 - Two Elements Vertical Loop Antenna for 40m

2 el loop for 7 MHz



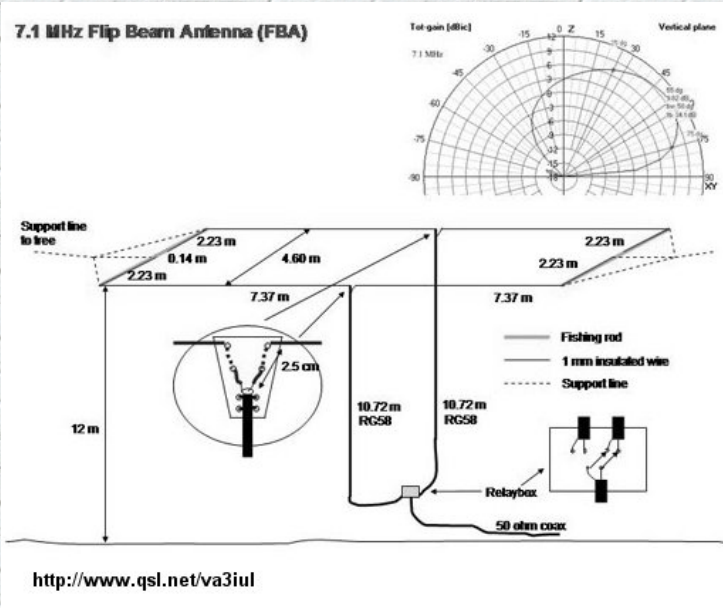
<http://www.qsl.net/va3iul>

276 - Double Extended Zepp Antenna for 40m

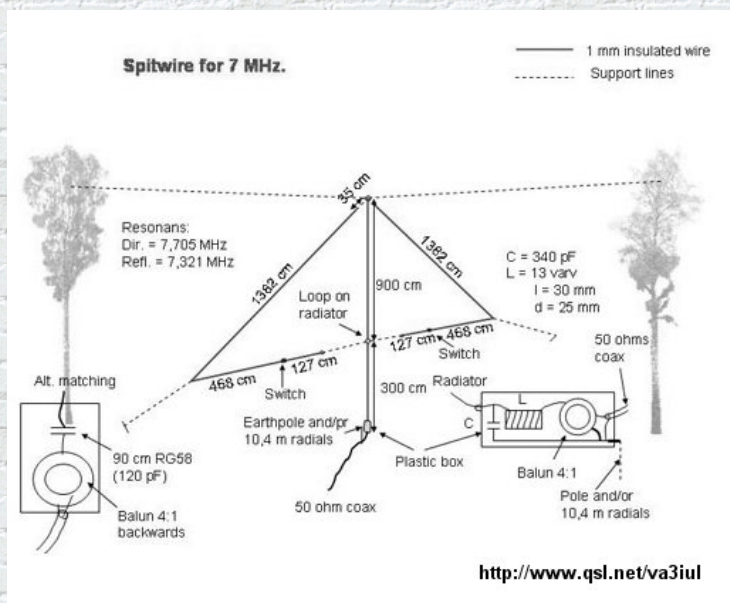


<http://www.qsl.net/va3iul>

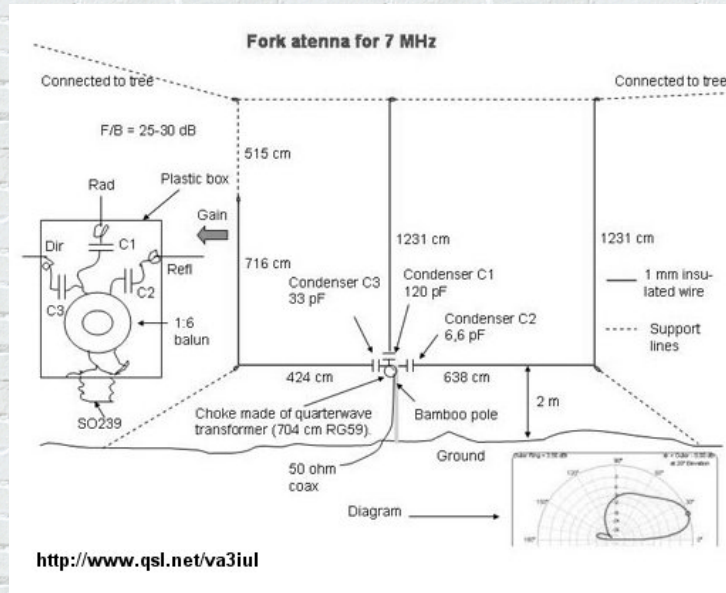
277 - Reversible Moxon Flip Beam for 40m



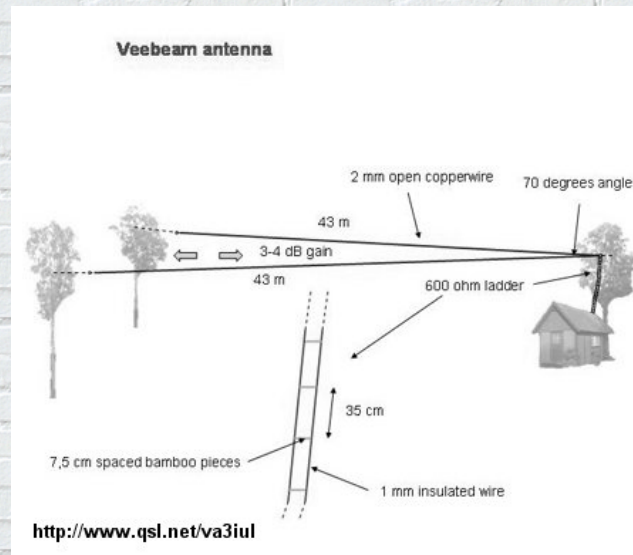
278 - Spitwire Antenna for 40m



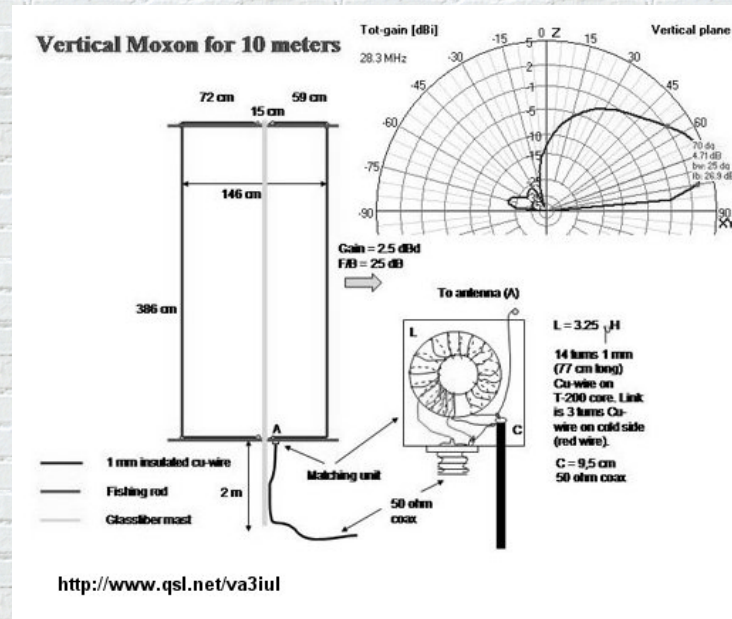
279 - Fork Antenna for 40m



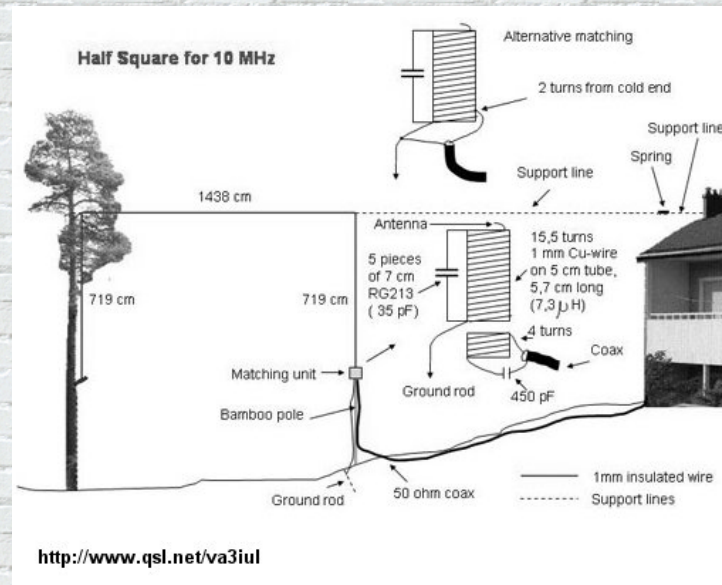
280 - Veebeam Antenna 3dB-Gain for All Bands



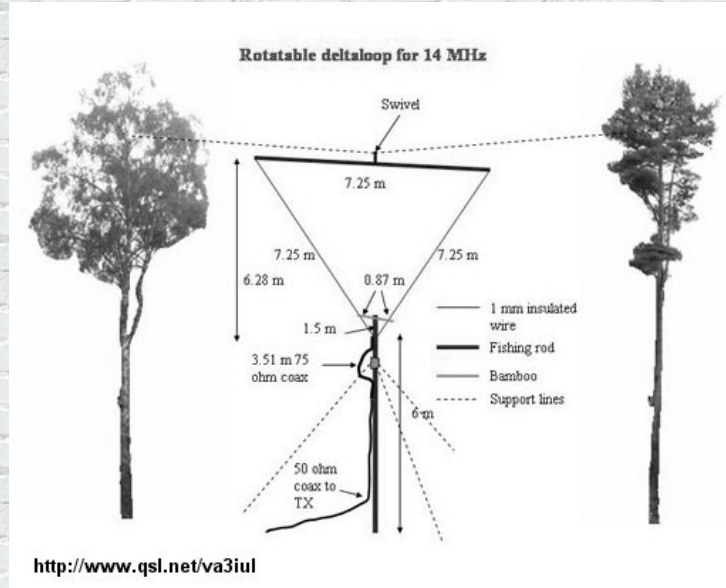
281 - Vertical Moxon Antenna for 10m



282 - Half-Square Antenna for 30m



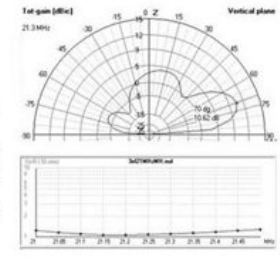
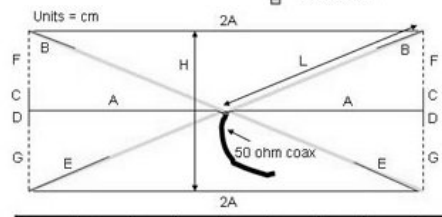
283 - Rotatable Vertical Delta Loop for 20m



284 - Mini-Horse Antenna 10dB-Gain for 40m-to-2m

MH-Antenna

Gain = 10 dB
F/B = 20 dB



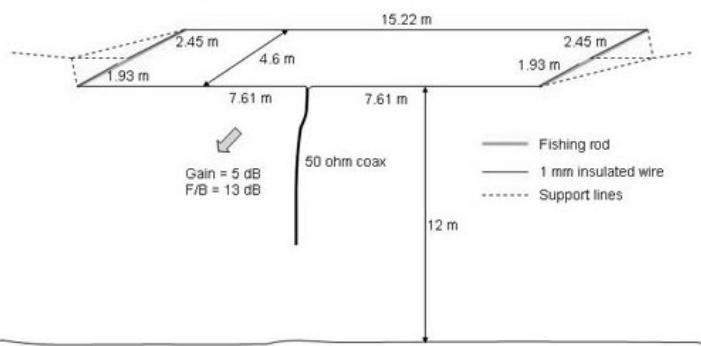
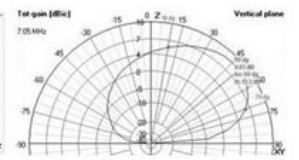
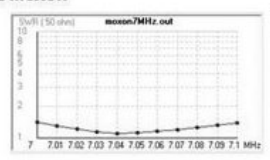
Freq	A	B	C	D	E	F	G	H	L
144	36	12	9	4.5	18	12	16.5	42	41.5
50.1	102.5	33	27	13.5	51	33	46.5	120	119
28.3	182	58	48	24	91	58	82	212	211
24.92	206	65	54	27	102	66	93	240	238
21.2	243	77	64	32	121	77	109	282	281
18.1	285	91	74	37	141	91	128	330	329
14.2	364	116	96	48	181	116	164	424	421
10.1	513	164	136	68	256	164	232	600	594
7.1	728	232	192	96	362	232	328	848	842

— 1 mm insulated wire
— Fishing rod
- - - Support lines

<http://www.qsl.net/va3iul>

285 - Compact Moxon Antenna 5dB-Gain for 40m

7 MHz Compact Moxon

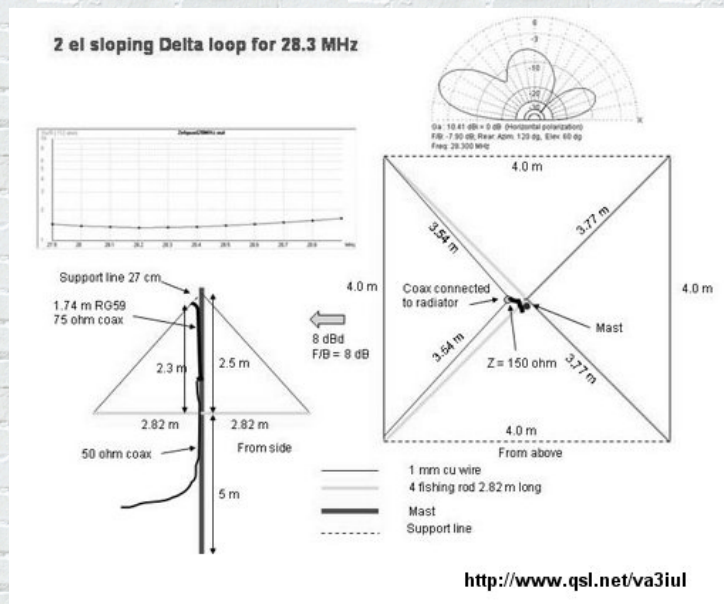


Gain = 5 dB
F/B = 13 dB

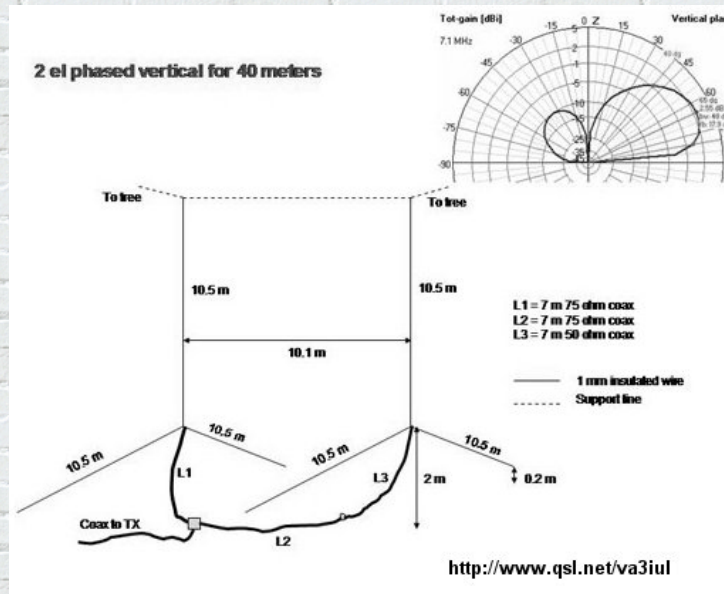
— Fishing rod
— 1 mm insulated wire
- - - Support lines

<http://www.qsl.net/va3iul>

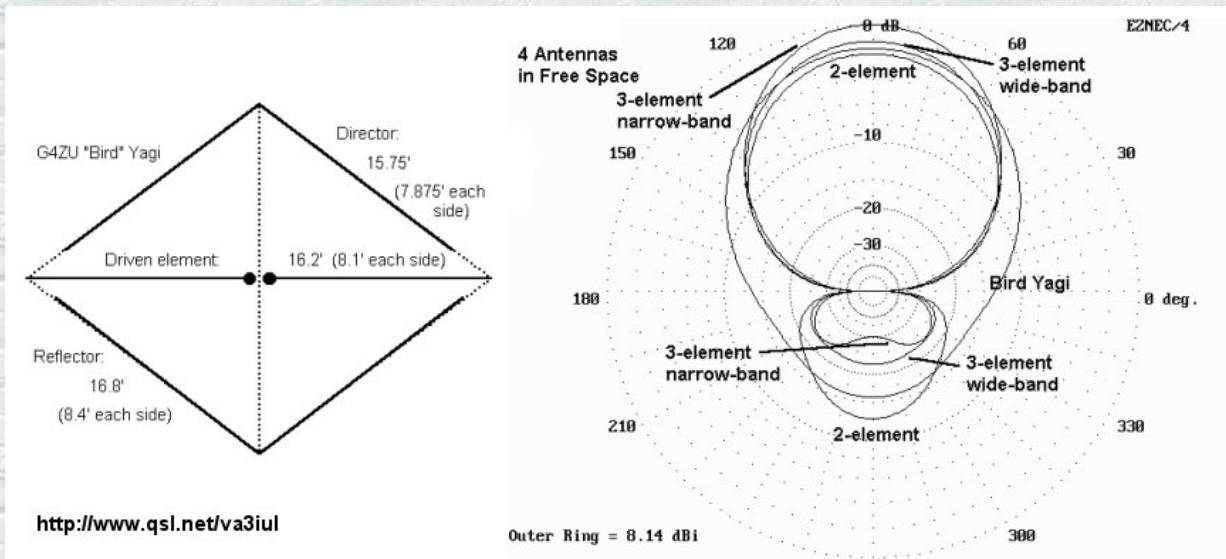
286 - Two Elements Sloping Delta Loop 8dB-Gain for 10m



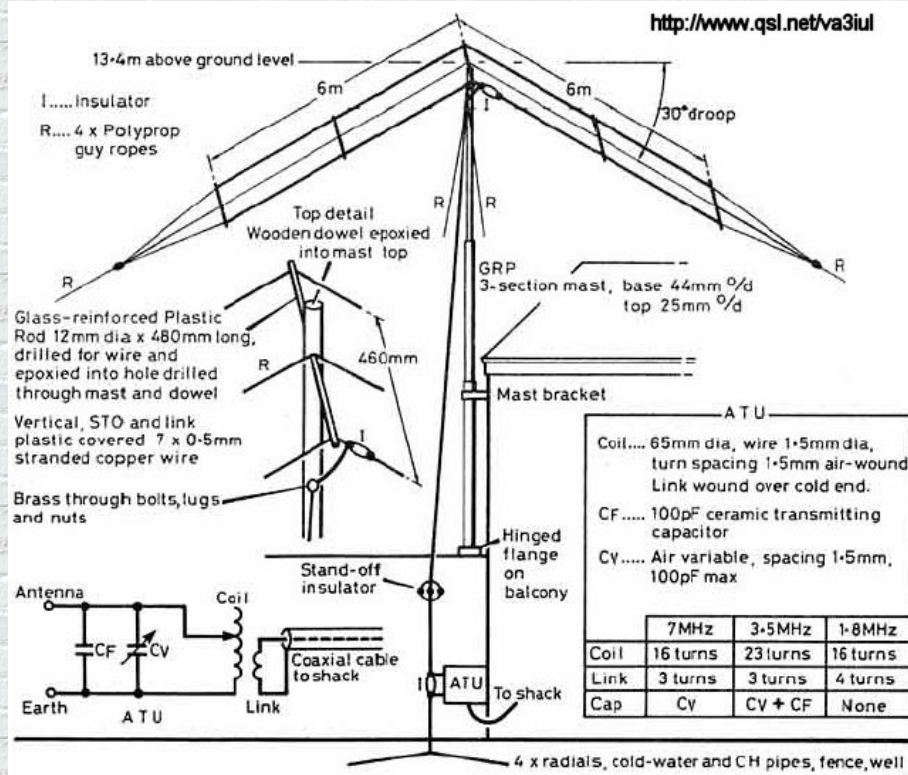
287 - Two Elements Phased Vertical Antenna 3dB-Gain for 40m



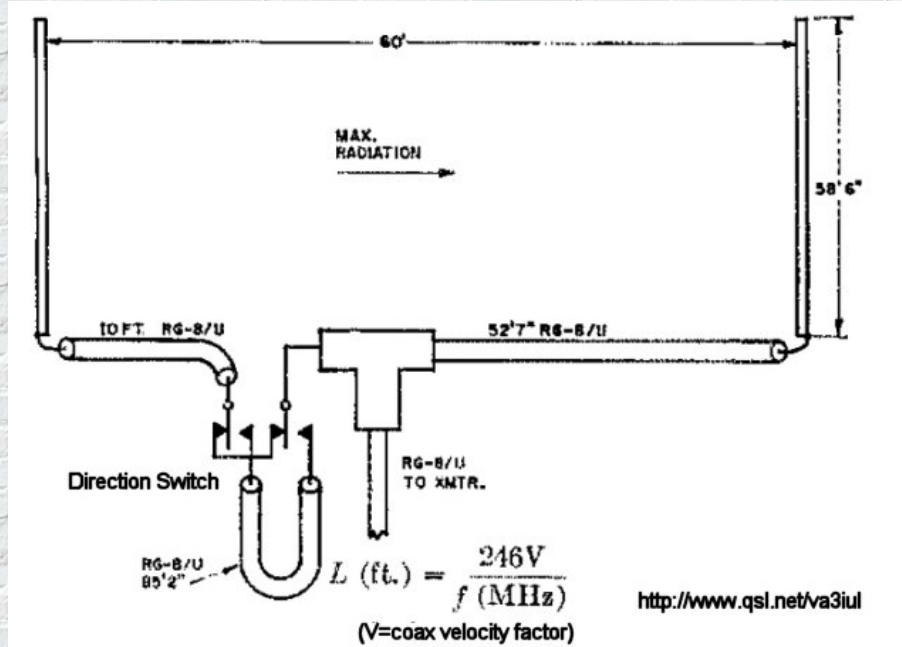
288 - Bird Yagi Wire Antenna G4ZU for 10m



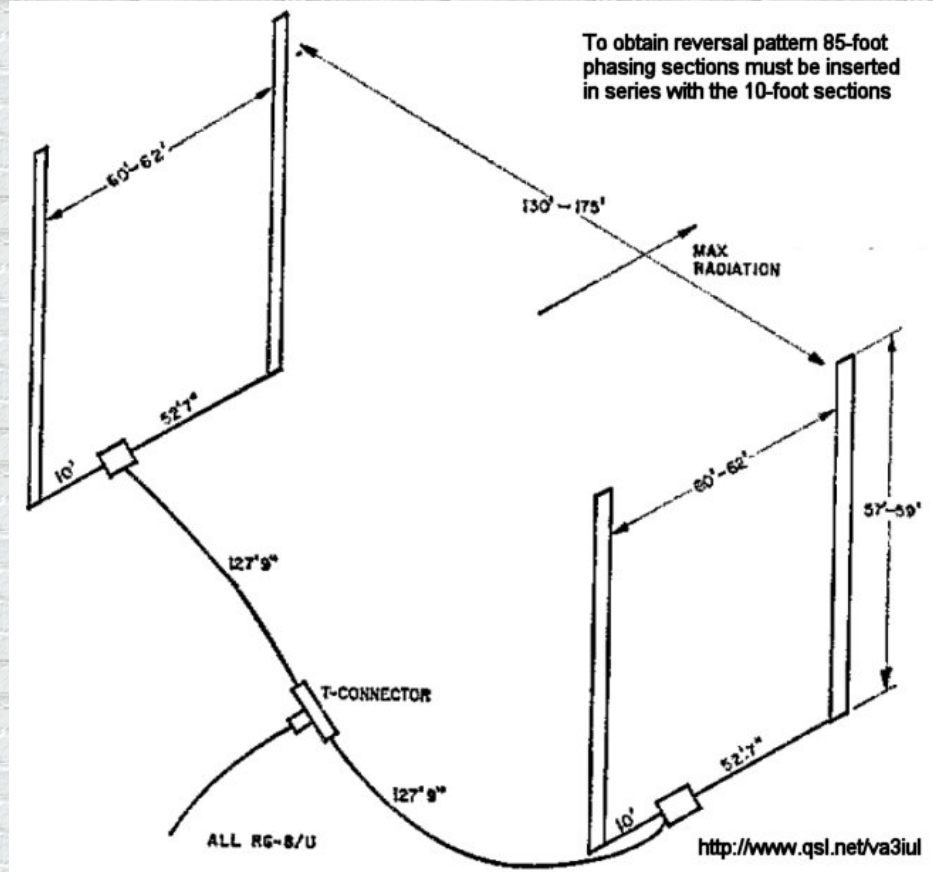
289 - Sardine Tin Opener (STO) Antenna for 160m,80m,40m



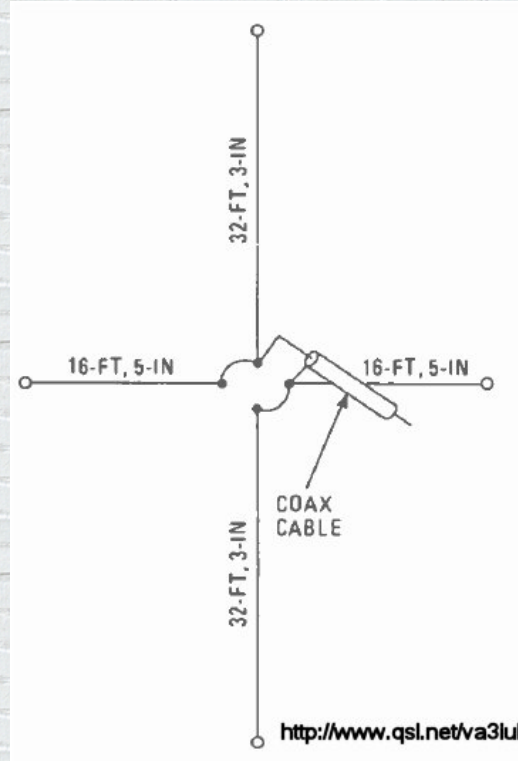
290 - Vertical Phased Endfire Antenna for 80m



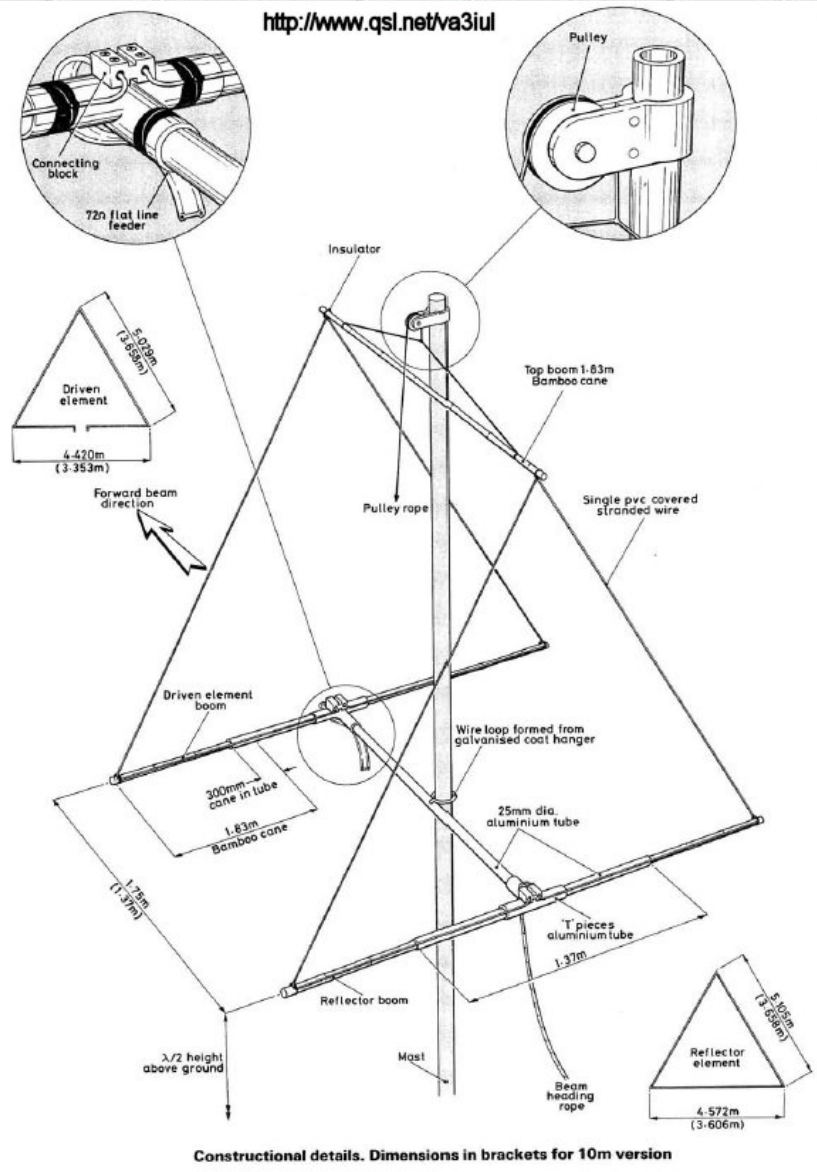
291 - Vertical Broadside Array for 80m



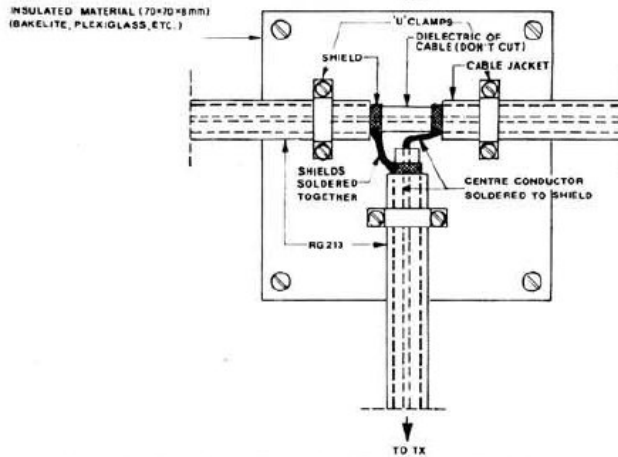
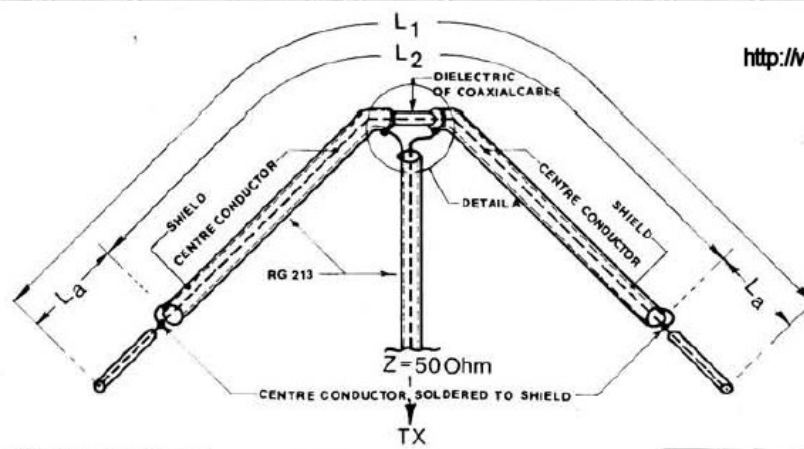
292 - Dual-Band Crossed Dipole Antenna for 40m, 20m



293 - 2 element Vertical Delta Loop Beam for 15m,10m



294 - Folded Coaxial Dipole Antenna for 80m to 2m



Formulas Used:

$$L_1 (m) = \frac{140-80}{F(MHz)}$$

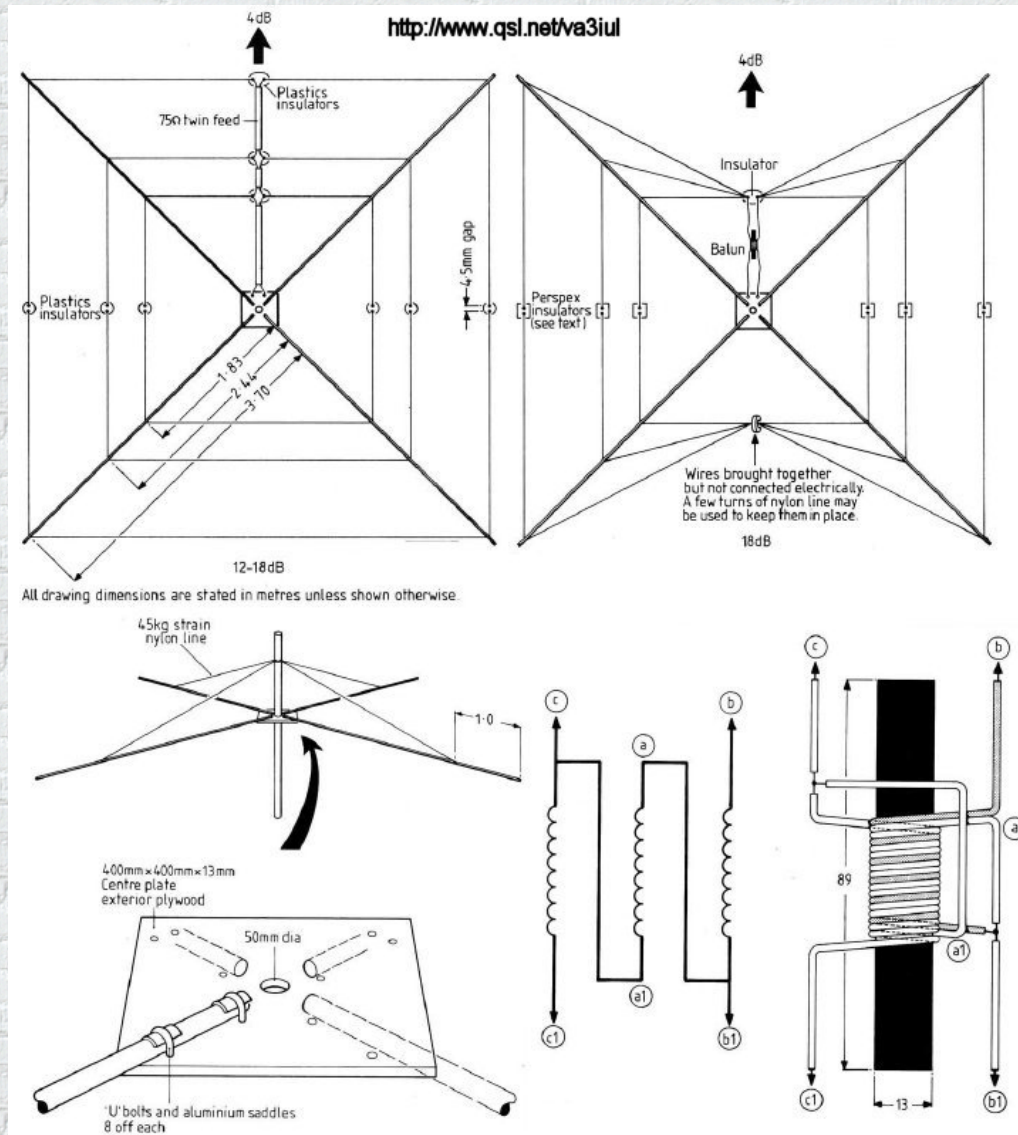
$$L_2 (m) = \frac{99-40}{F(MHz)}$$

$$L_a (m) = \frac{(L_1 - L_2)}{2}$$

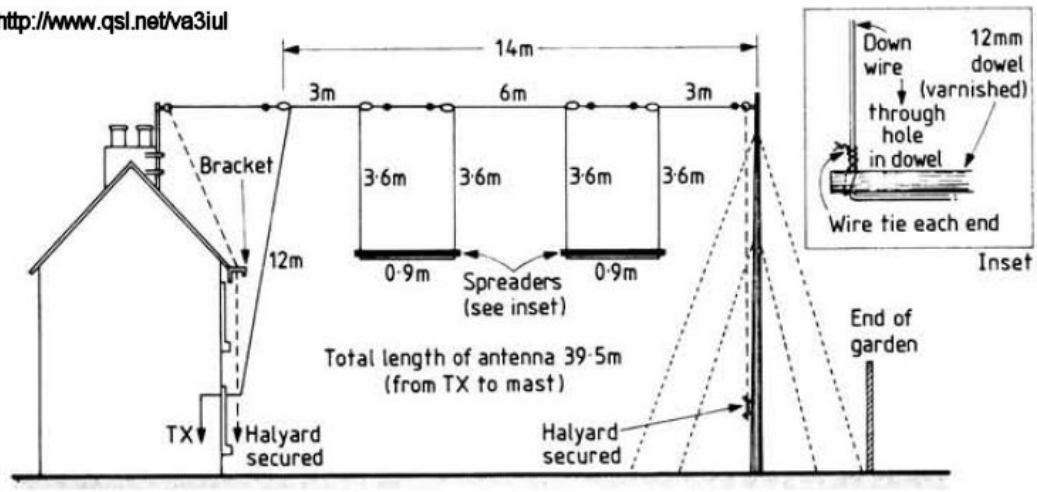
For coaxial line with Z = 50 ohms and velocity factor 0.66.

Desired Band m	Centre Frequency MHz	L ₁ m	L ₂ m	L _a m	Coaxial Line Type
80	3-650	38-58	27-23	5-67	RG-213
40	7-050	19-98	14-10	2-94	
30	10-125	13-91	9-82	2-05	
20	14-170	9-94	7-02	1-46	
16	18-118	7-77	5-49	1-14	
15	21-170	6-66	4-69	0-99	
12	24-940	5-65	3-99	0-83	
10	28-800	4-89	3-46	0-72	
6	51-000	2-77	1-95	0-41	
2	145-000	0-97	0-69	0-14	

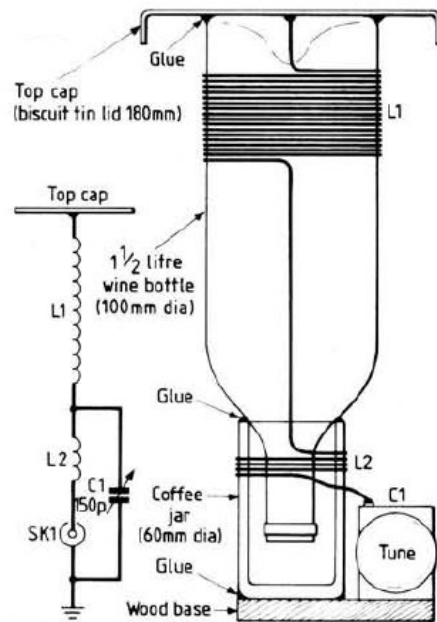
295 - VK2ABQ Tribander 4dBd-Gain for 20m,15m,10m



296 - Folded Long-Wire Antenna for 40m



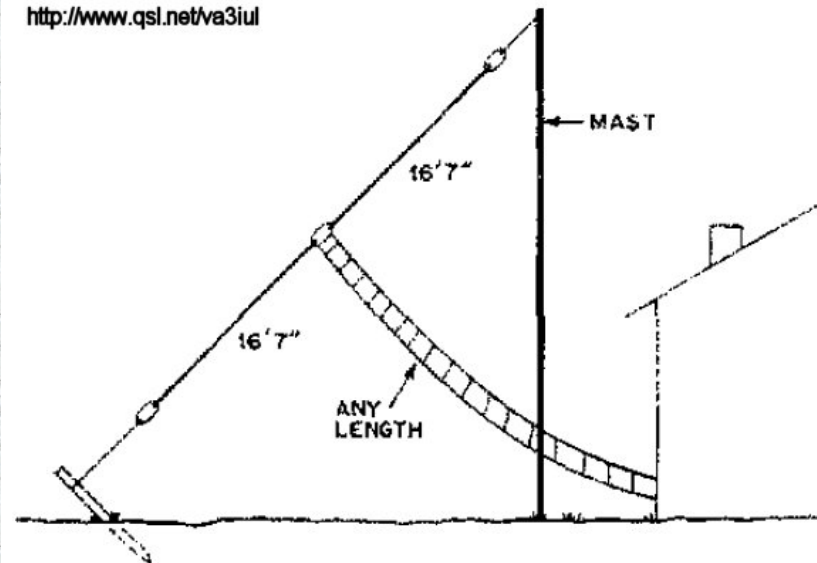
297 - Wine Bottle Vin-Plonk Antenna G2BZQ for 20m



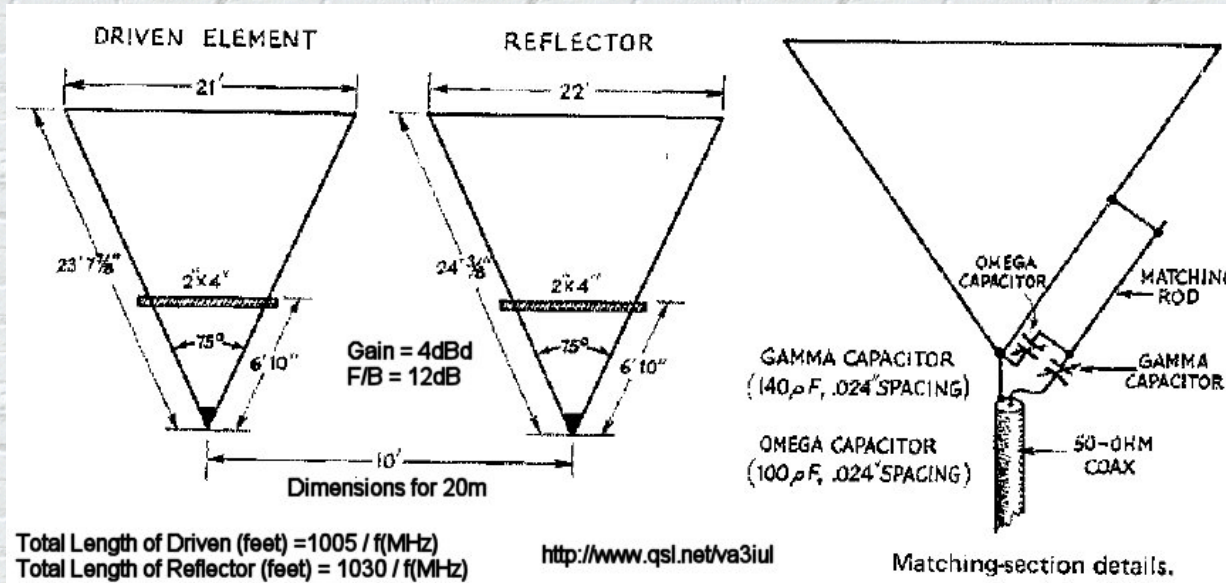
L1-11m of 1 x 0.6 pvc covered wire.
 L2 is 3½ turns of 20 s.w.g.tinned copper wire
 The base 25mm thick wood
 wine bottle "body" is 100m diameter

<http://www.qsl.net/va3iul>

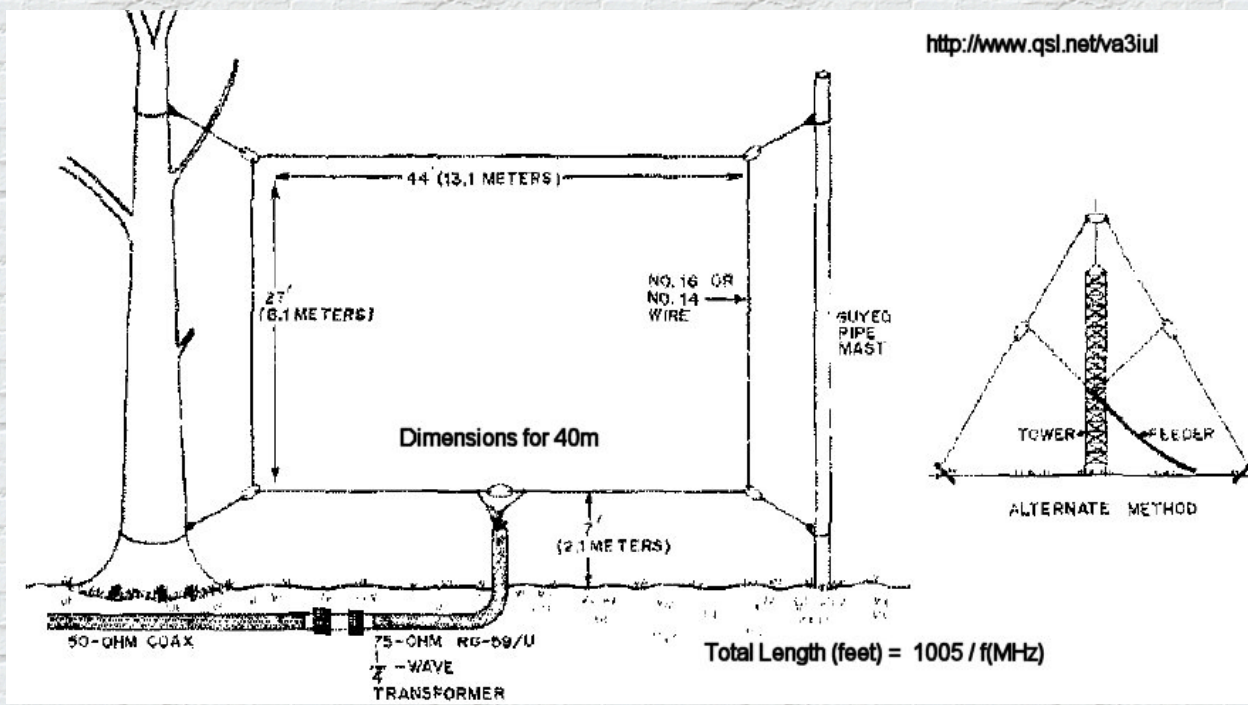
298 - Guy-Wire Doublet Tri-Band Antenna for 10m,15m,20m



299 - Two-Element Vertical Delta Loop Beam Gain-4dB

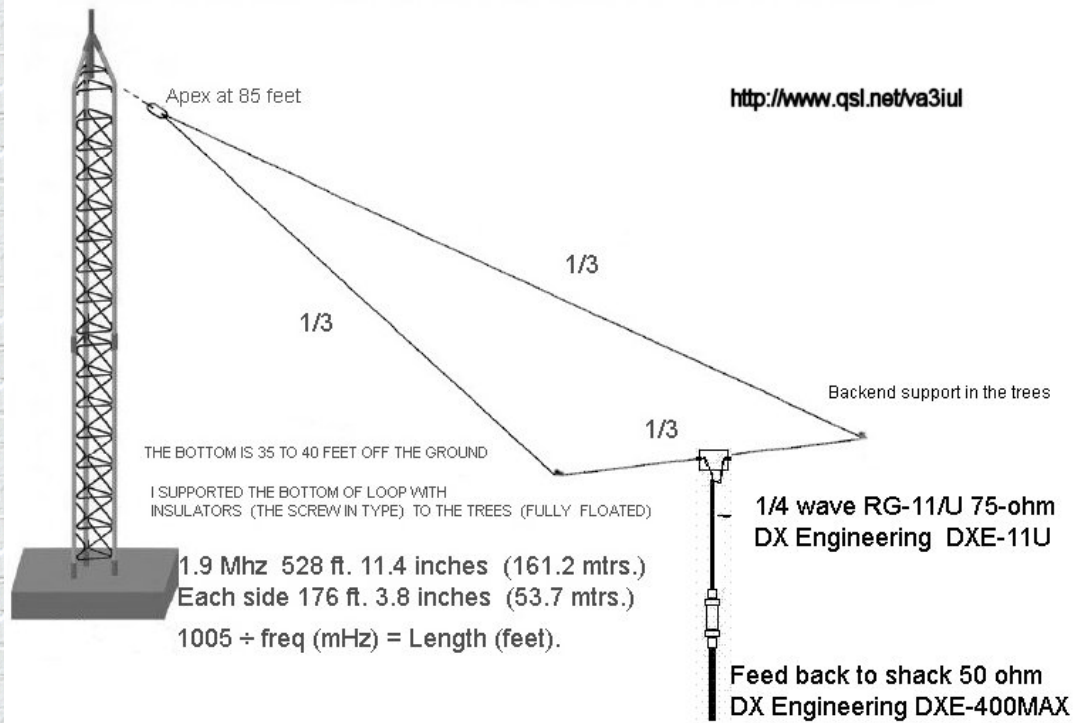


300 - Novi-Loop Antenna

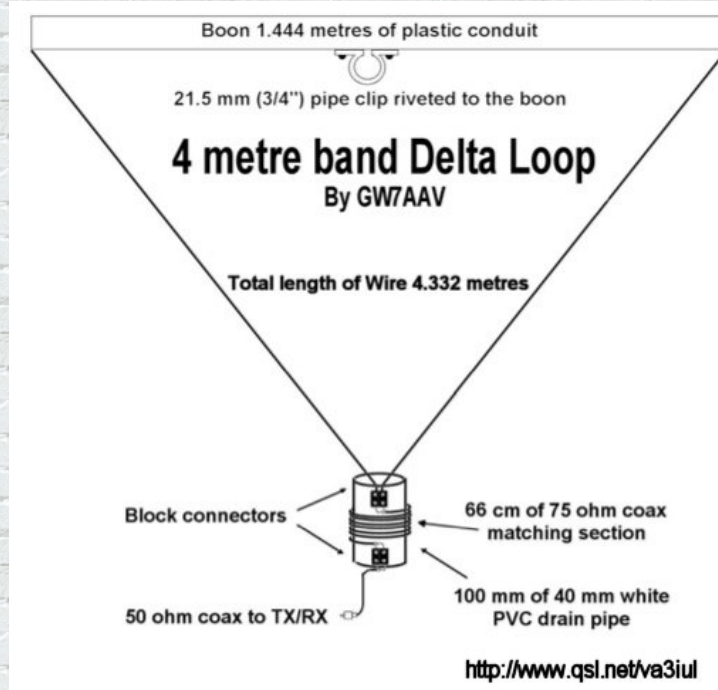


301 - K3BM Sloping Delta Loop Antenna for 160m

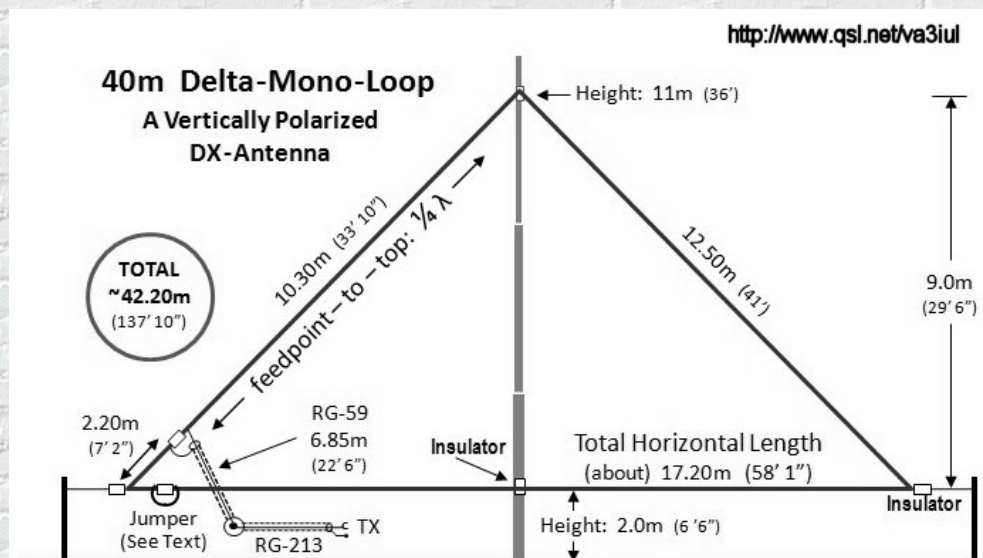
K3BM SLOPING 160 METER MONO BAND DELTA LOOP



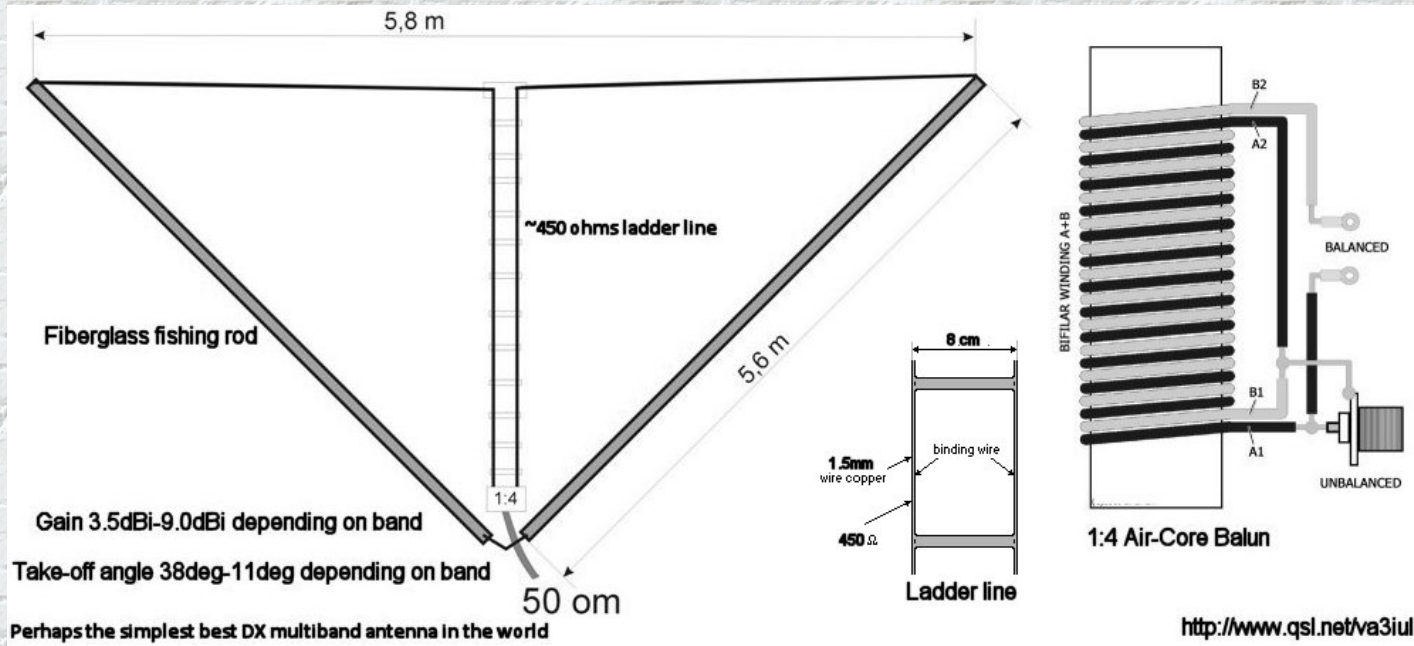
302 - Vertical Delta Loop GW7AAV for 4m



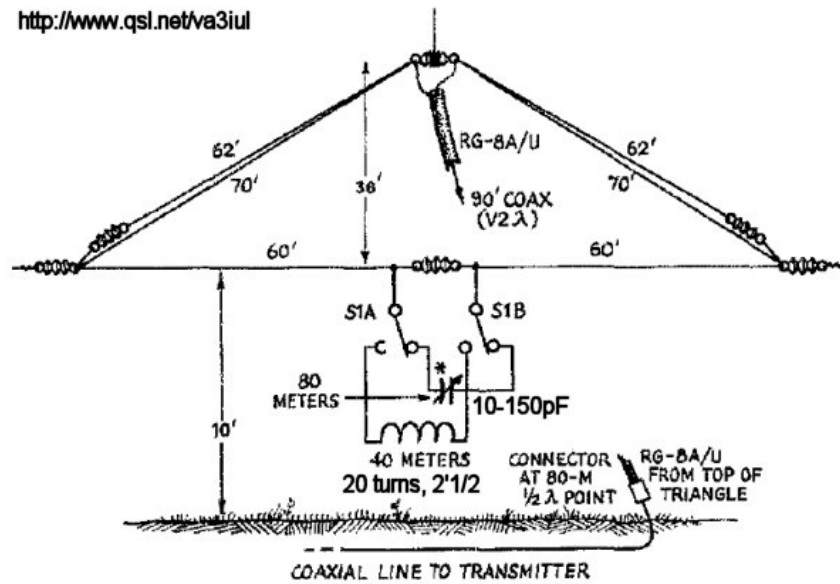
303 - Delta Mono-Loop Antenna DJ0IP for 40m



304 - Multiband Vertical Delta Loop M0PLK for 30m to 10m

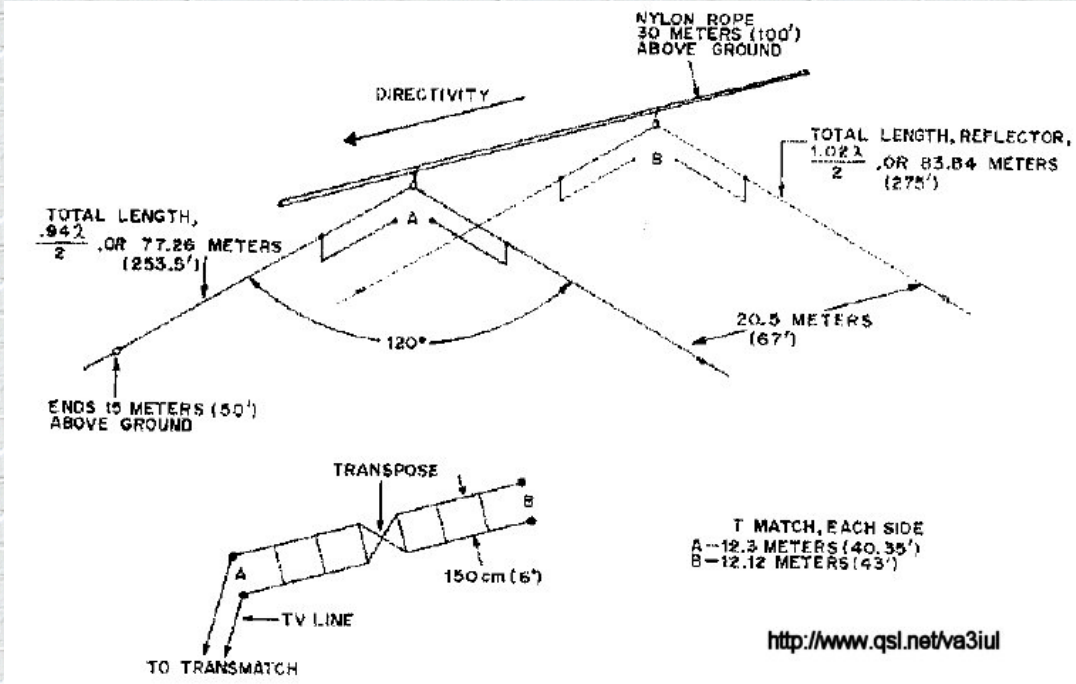


305 - Inverted Dipole Delta Loop Antenna for 40m,80m,160m

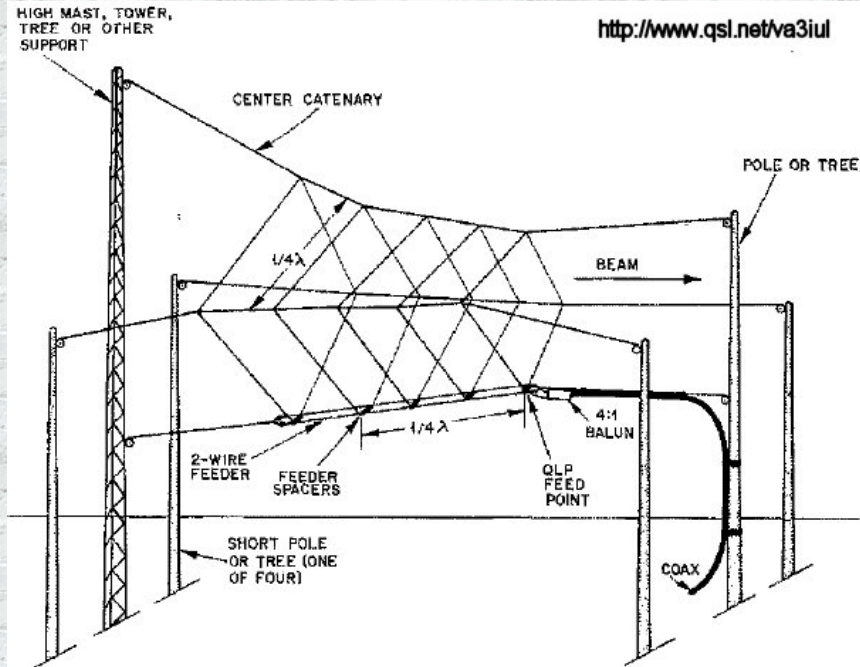


Suitable dimensions and switching arrangement for the three-band antenna. S1 is a dpdt knife switch. The switch is left in the open position for 160-meter operation.

306 - Two Element Wire Beam OK1ATP for 160m



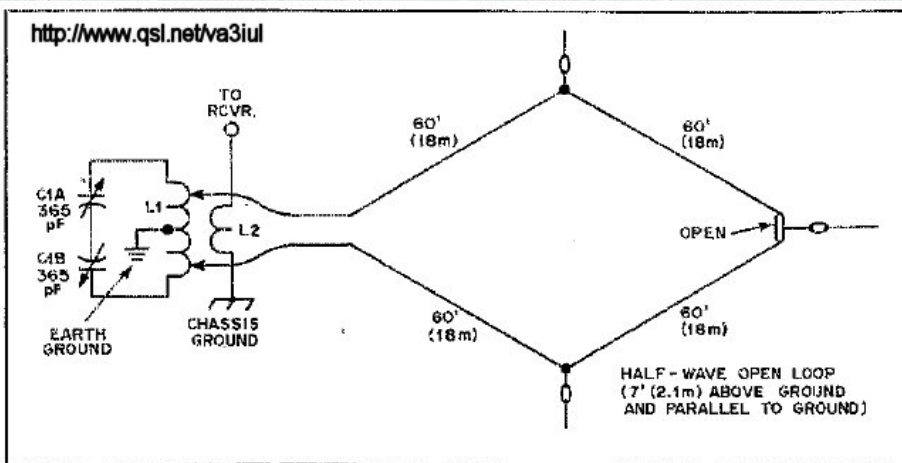
307 - Quad Fixed Beam Antenna for 20m



Dimensions for the 20-m QLP

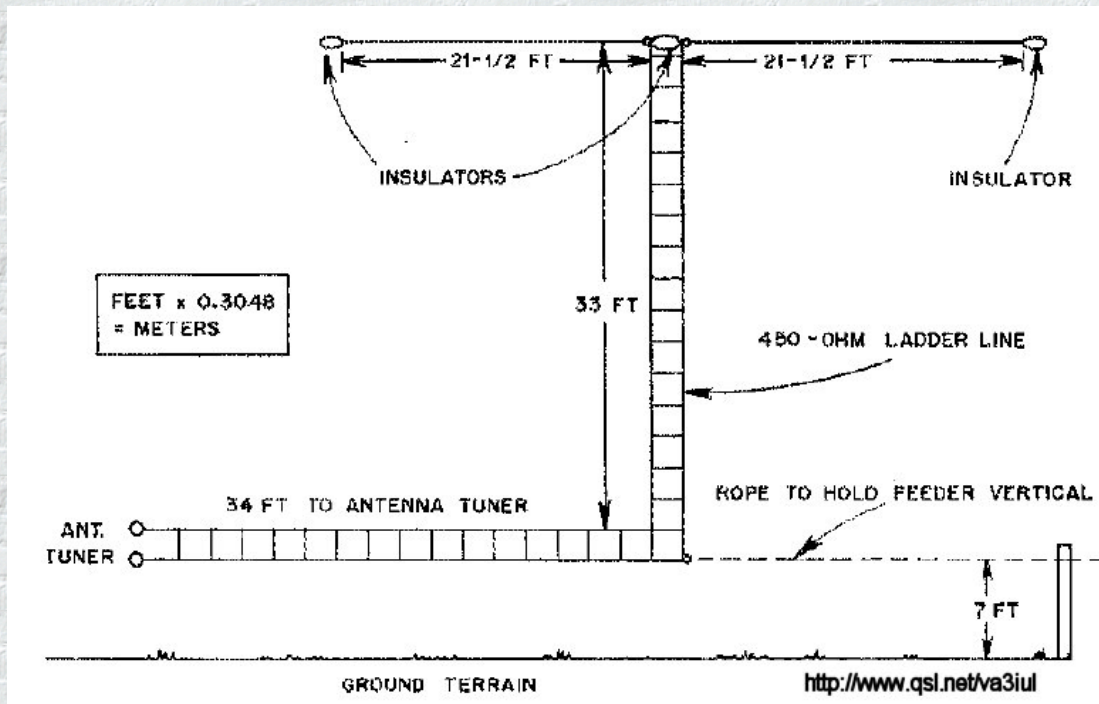
QUAD ELEM. NO.	SIDE LENGTH	TOTAL ELEM. LENGTH
1	20' (6.10 m)	80' (24.38 m)
2	18' (5.49 m)	72' (21.95 m)
3	16.25' (4.95 m)	65' (19.81 m)
4	14.75' (4.50 m)	59' (17.98 m)
5	13.5' (4.11 m)	54' (16.46 m)
S-NO.	S-LENGTH	
1	7.4' (2.26 m)*	
2	6.7' (2.04 m)*	
3	6.0' (1.83 m)*	
4	4.8' (1.46 m)*	

308 - Open Loop RX Antenna for 160m

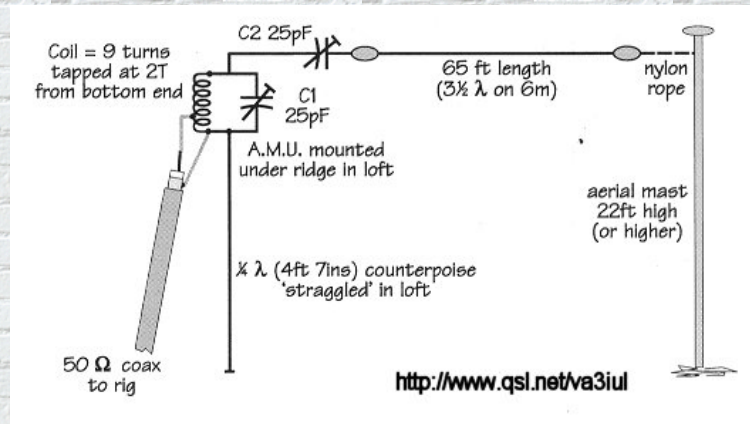


A half-wavelength open-loop receiving antenna for 160 meters. The antenna is parallel to the earth and spaced seven feet above it. C1 is a two-section broadcast-radio variable capacitor. L1 should have an inductance of $50 \mu\text{H}$. The feeders are tapped on L1 to obtain an SWR of 1. An earth ground is connected to the center of L1, but L2 is returned to chassis ground

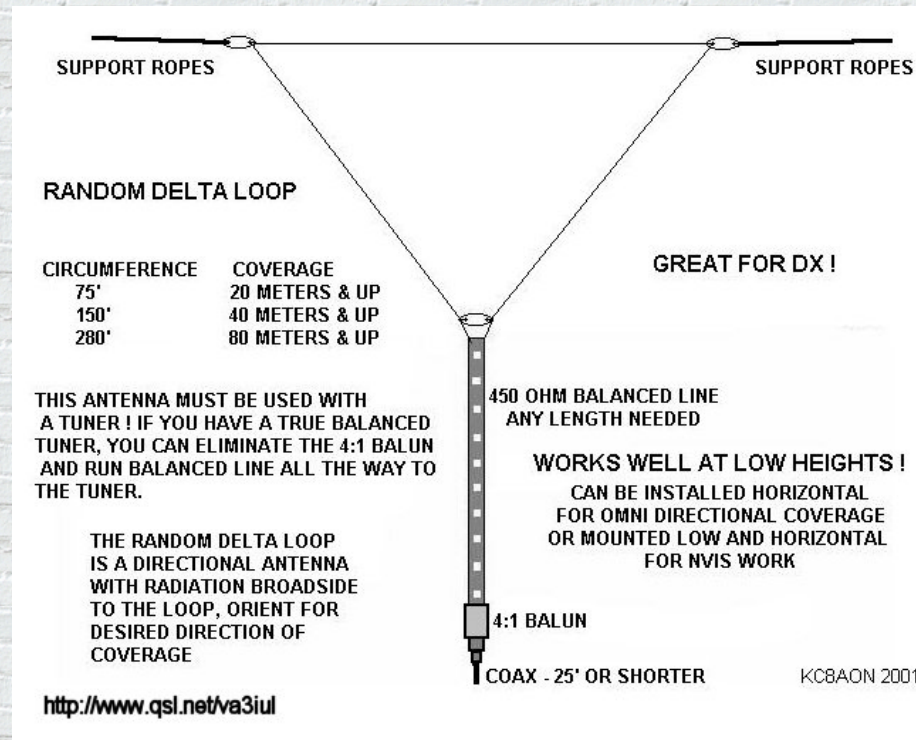
309 - Hybrid Multiband Antenna for 160m to 10m



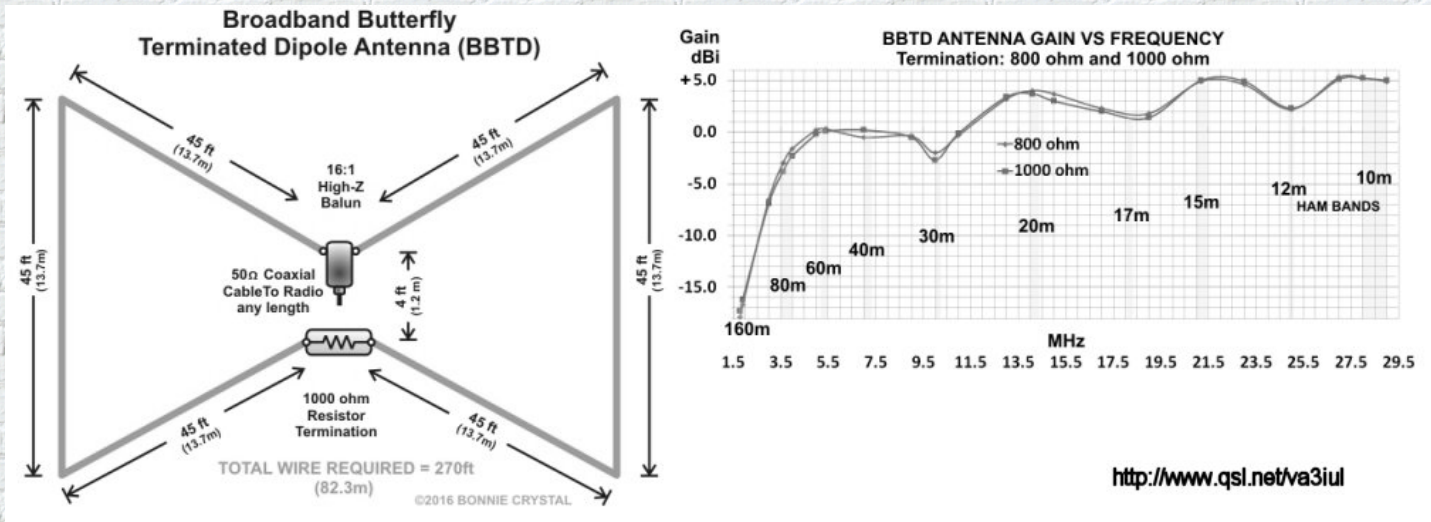
310 - Long Wire Antenna GW0GHF for 6m



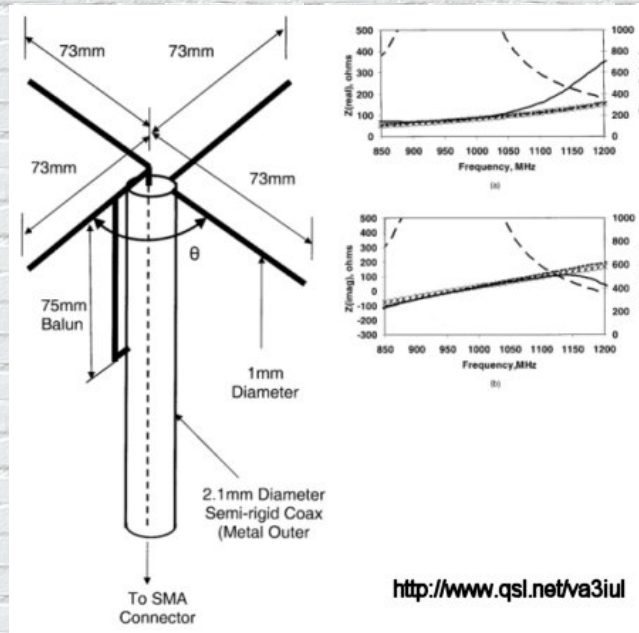
311 - Random Delta Loop KC8AON for 80m to 10m



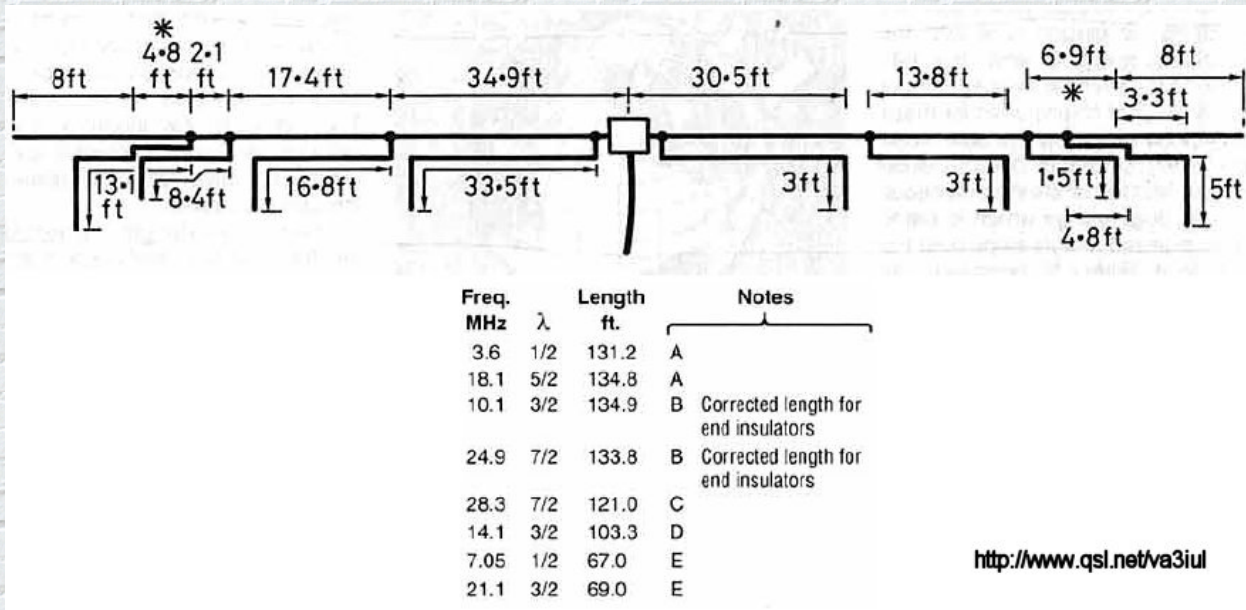
312 - Broadband Butterfly Terminated Dipole KQ6XA 80m-10m



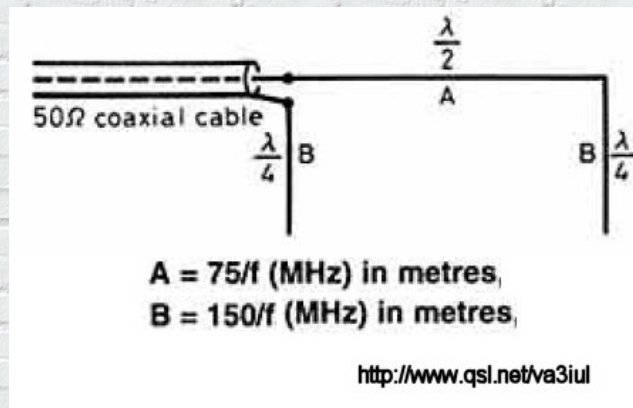
313 - Crossed Dipole Antenna for 23cm



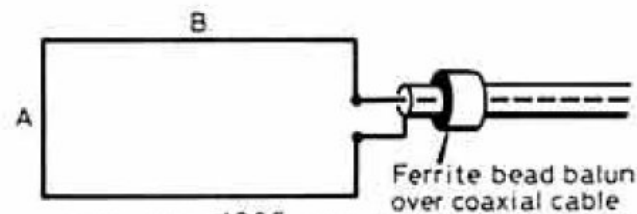
314 - The Ultimate Eight Bander Antenna



315 - Simple DX Wire Antenna LA5UF



316 - Elongated Quad-Loop Antenna G3BDQ

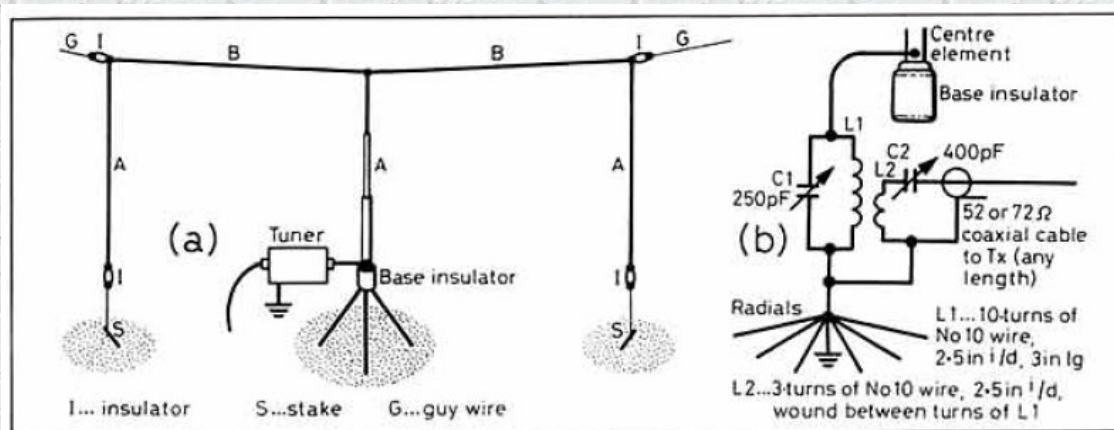


$$2A + 2B = \frac{1005}{f(\text{MHz})} \text{ feet}$$

$$A = \frac{1993}{f(\text{MHz})} \text{ inches} \quad B = \frac{4028}{f(\text{MHz})} \text{ inches}$$

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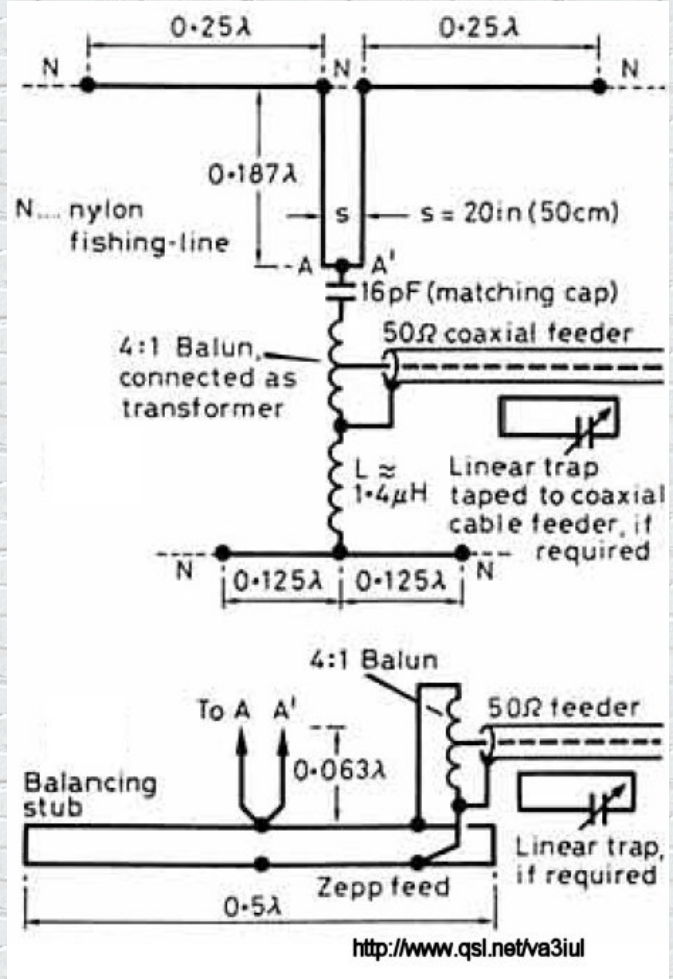
317 - Bobtail-Curtain Antenna for 20m,40m



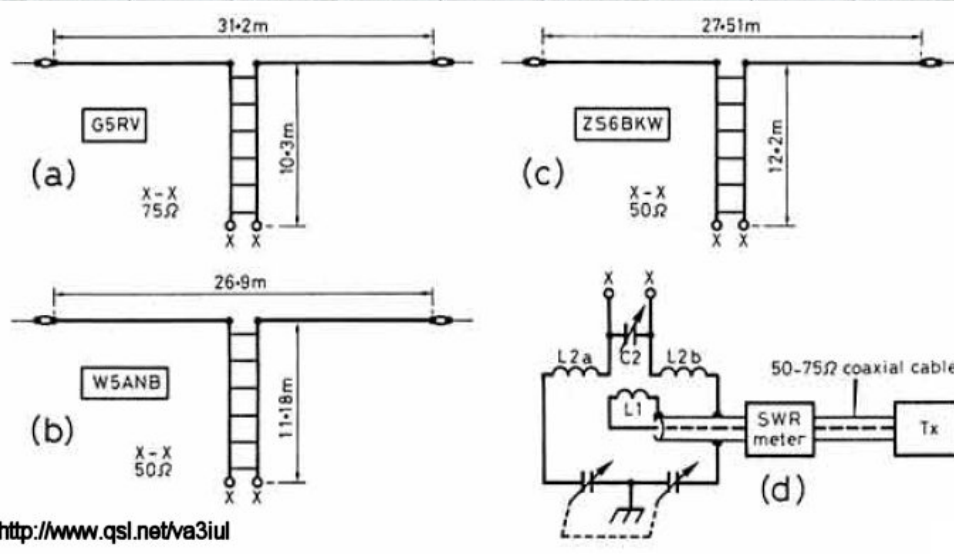
(a) The Bobtail- curtain antenna as described in many Handbooks. This design comes from VE1TG (*Ham Radio*, July 1969) as reproduced in *ART7*. Dimensions for 14MHz A 16.5ft, B 33ft (7MHz A 33ft, B 66ft).
 (b) Tuner used by VE1TG on 7MHz. For 14MHz L1 and C1 about half the values shown, C2 about the same.

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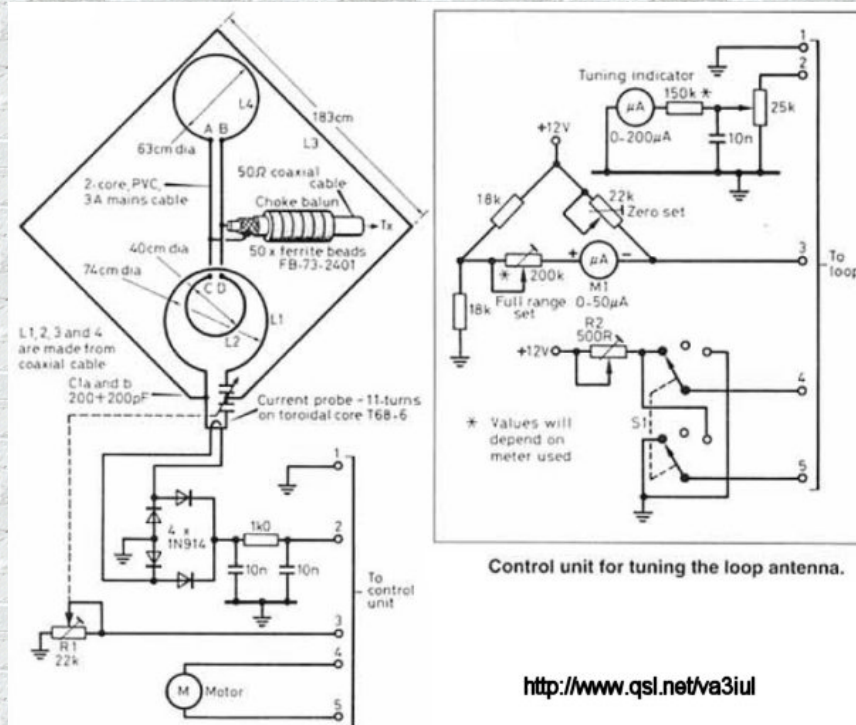
318 - Vertical Tee Antenna



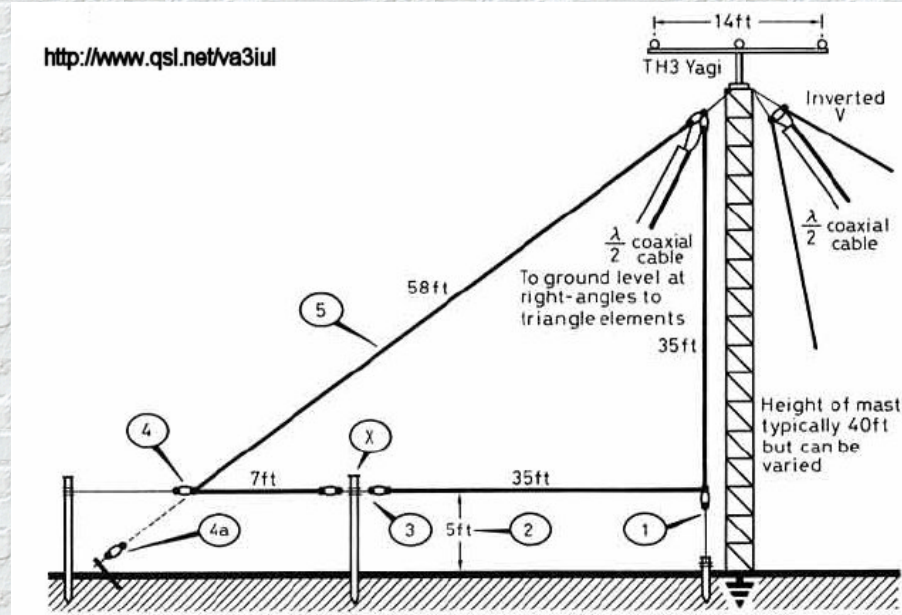
319 - Three Versions of Wide Band Dipoles



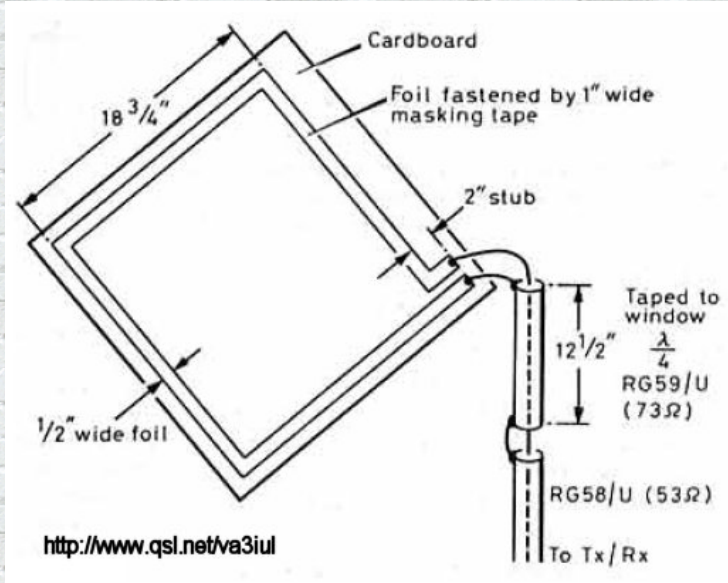
320 - All HF Bands Loop Antenna GI2FHN



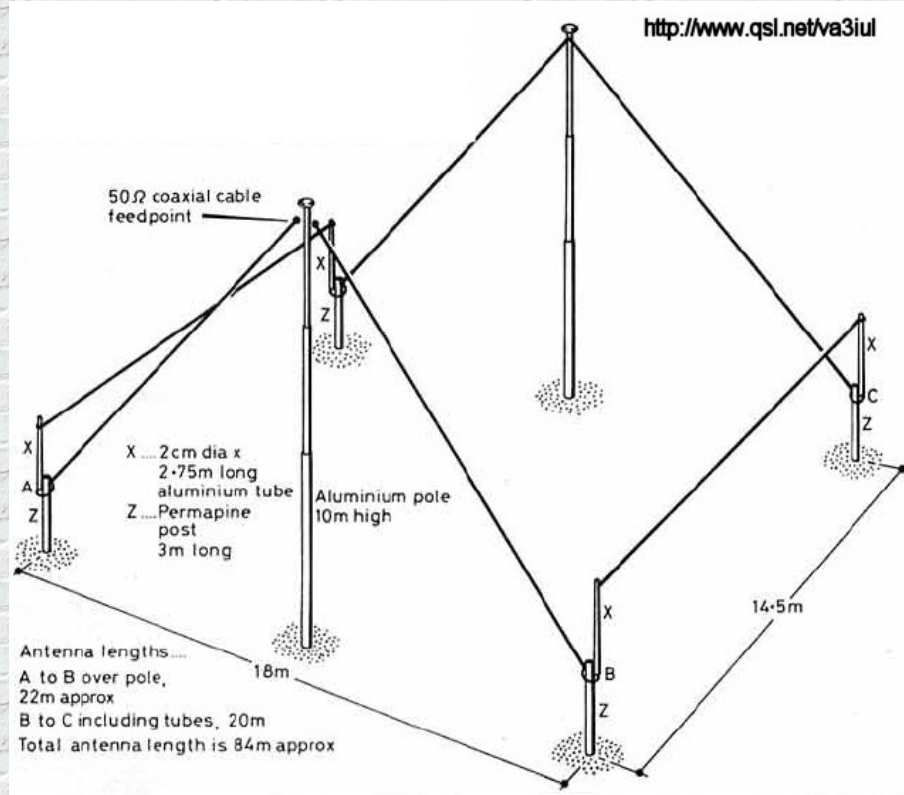
321 - Triangle Sloper 3dB-Gain G8PO for 160m,80m,40m



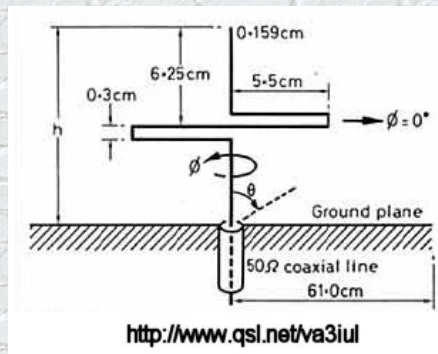
322 - Quad Window Antenna for 2m



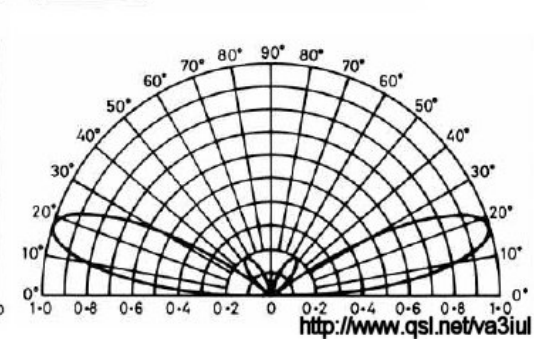
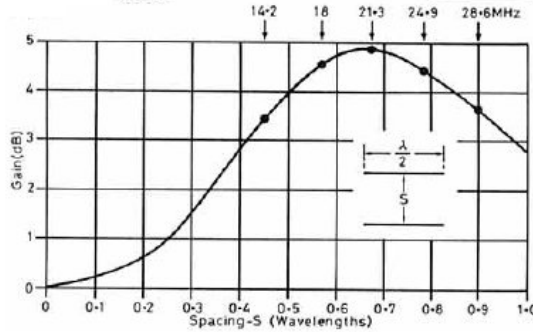
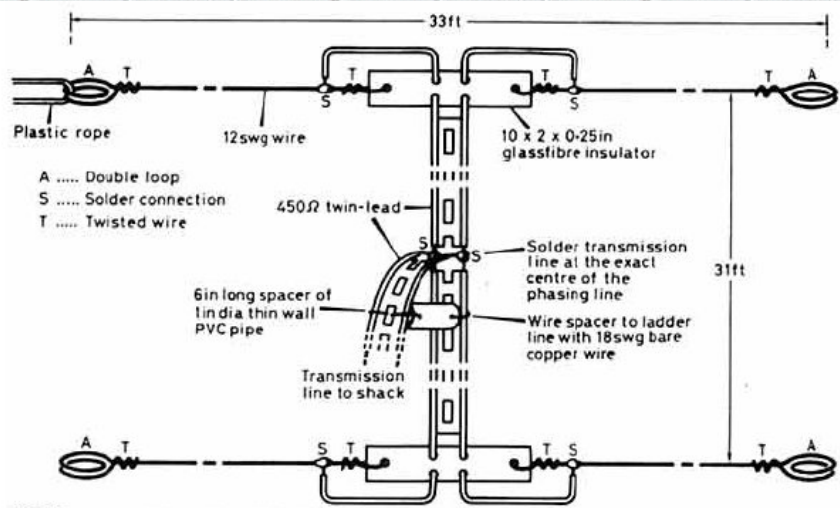
323 - Hamtenna VK6VH for 80m



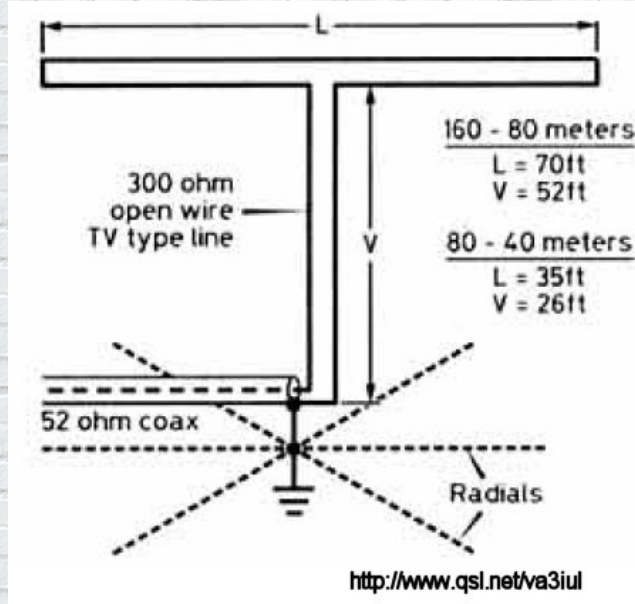
324 - Monopole Antenna Loaded with Folded Dipole for 23cm



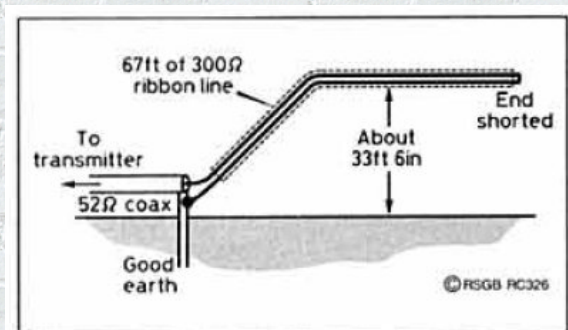
325 - Lazy-H Antenna for 20m, 17m, 15m, 12, 10m



326 - Multee Antenna for 160m,80m,40m



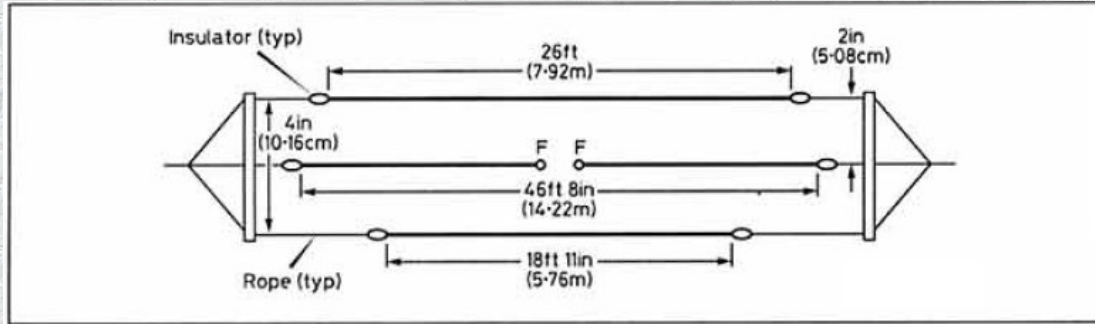
327 - Marconi Ribbon Line Antenna for 80m



$\lambda/4$ ground Marconi antenna for 3.5MHz using 57ft of 300- or 450-ohm ribbon line. A good earth system (preferably including radials or elevated counterpoise) is needed for good performance.

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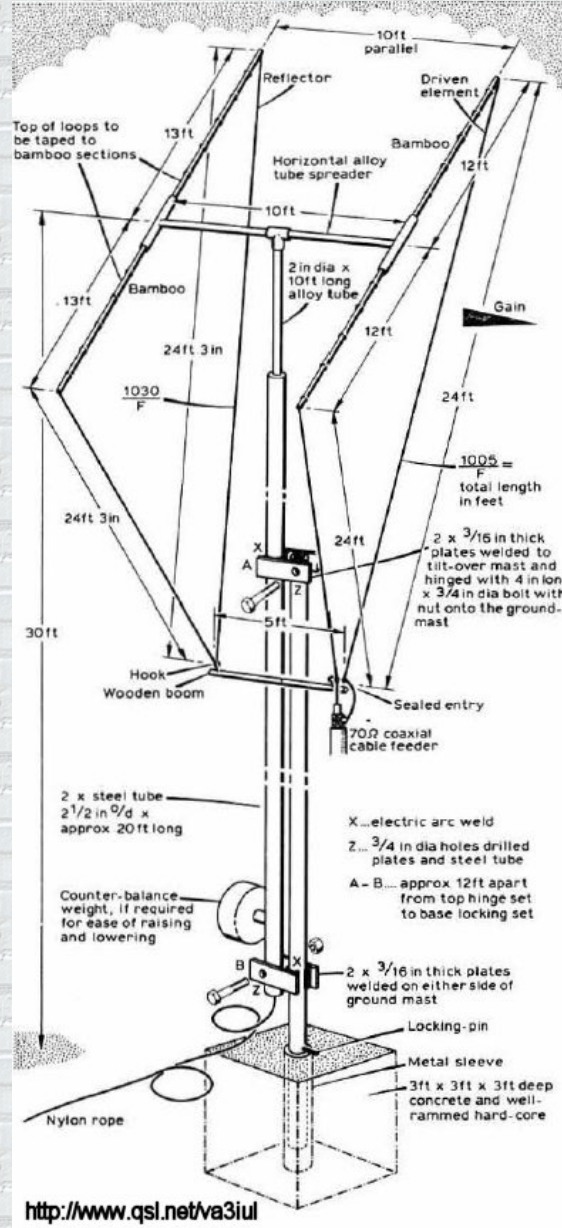
328 - WARC Tri-Band Antenna for 30m,17m,12m



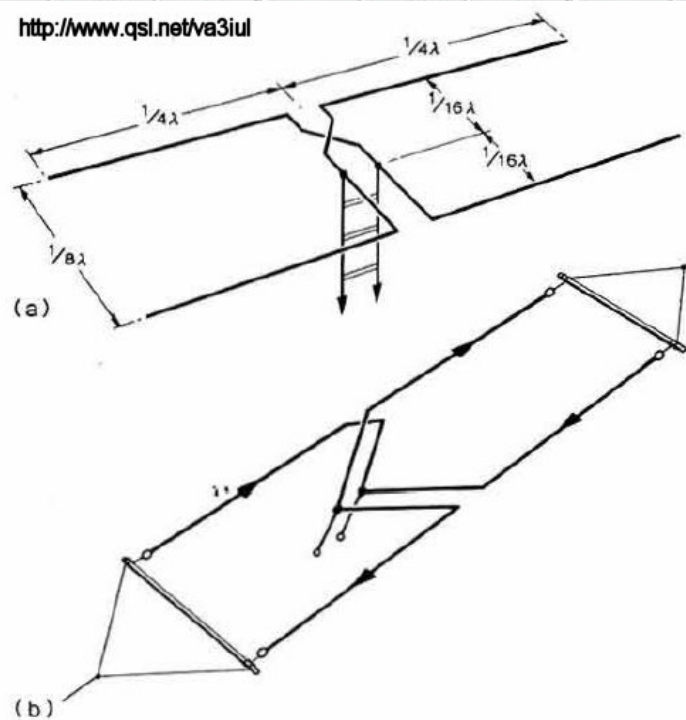
K9AY's experimental tri-band antenna for the 10, 18 and 24MHz band using the close-coupled (open-sleeve) approach. Dimensions are for an antenna made from No 12 AWG wire at a height of 45ft. Insulated spacers are required to keep the wires in alignment. Extra closely coupled wires could be added radially around the driven element for 14 and 21MHz but there will be a practical limit to the number of bands due to the growing complexity of interactions and structure.

<http://www.qsl.net/va3iul>

329 - Two-Element Delta Loop Beam for 20m,10m

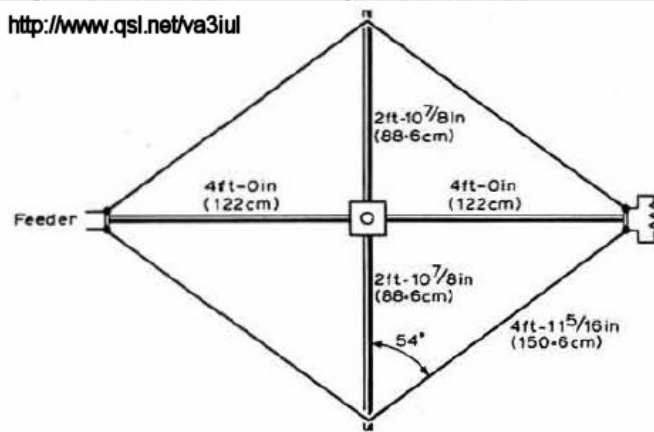


330 - Bidirectional Array Antenna W8JK for 20m to 10m



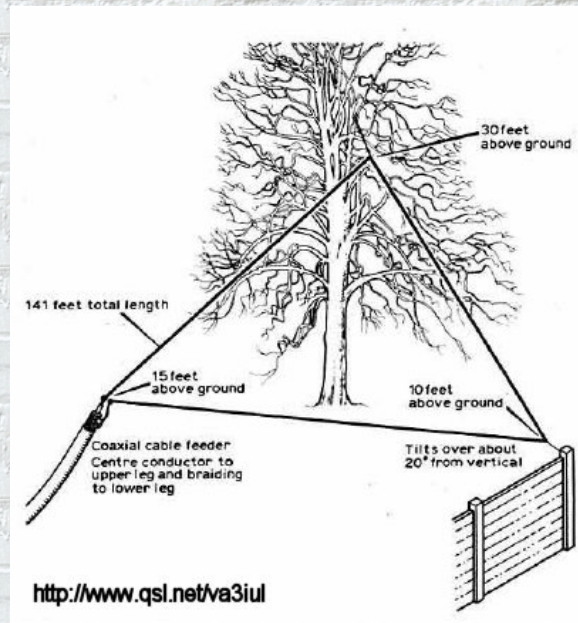
(a) Basic single-section centre-fed W8JK bidirectional array. With a 14MHz design frequency it should work well (and with some extra gain) at all frequencies to 28MHz. It consists of two closely-spaced dipoles fed out of phase. Spacing is non-critical but symmetry should be preserved and the array fed from balanced line through suitable atn. (b) W8JK implemented in wire form as fixed array, but note that the low radiation resistance calls for good insulation and minimum coupling off the ends into supports (use nylon or plastic rope etc rather than support wires)

331 - High Gain Rhombic Antenna for 70cm

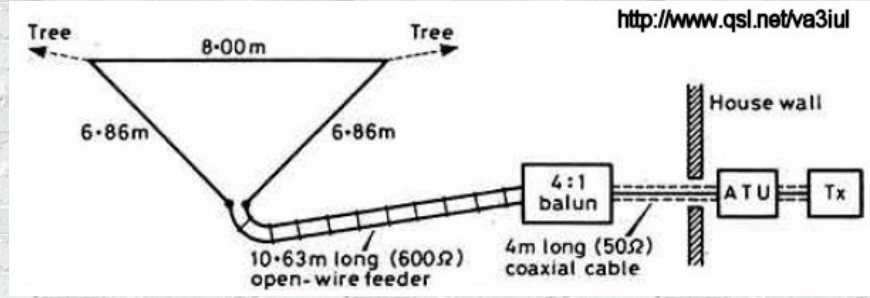


N3AWE's 432MHz rhombic antenna only 8ft in overall length yet capable of gains of the order of 18dB. Terminating and input impedances about 300Ω

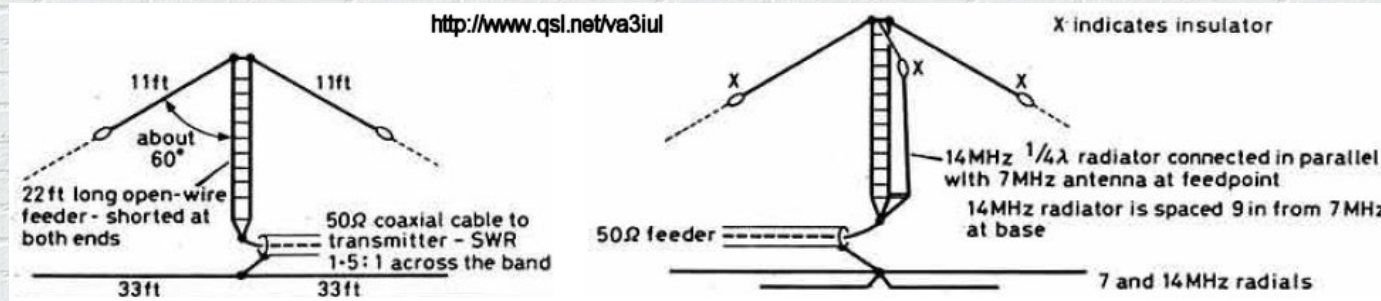
332 - Inverted Tree Delta Loop for 40m



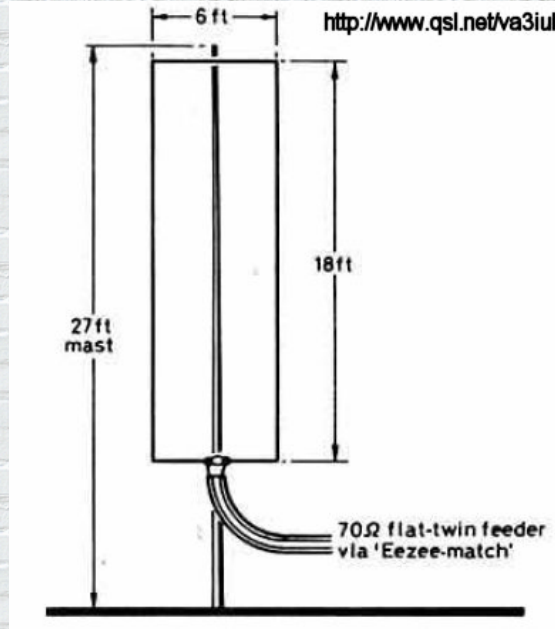
333 - Triangular Multiband Loop Antenna for 80m to 10m



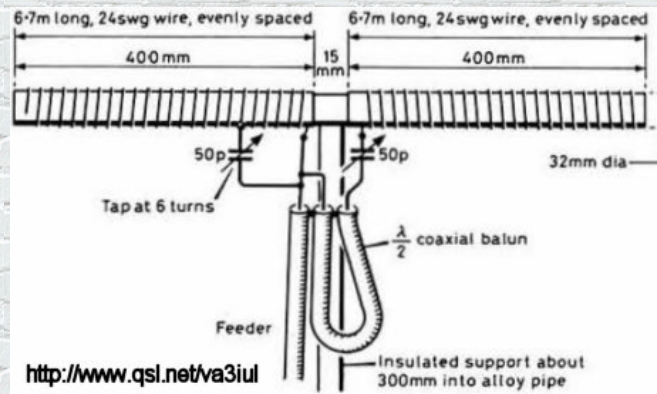
334 - T-Antenna with Sloping Elements for 40m,20m



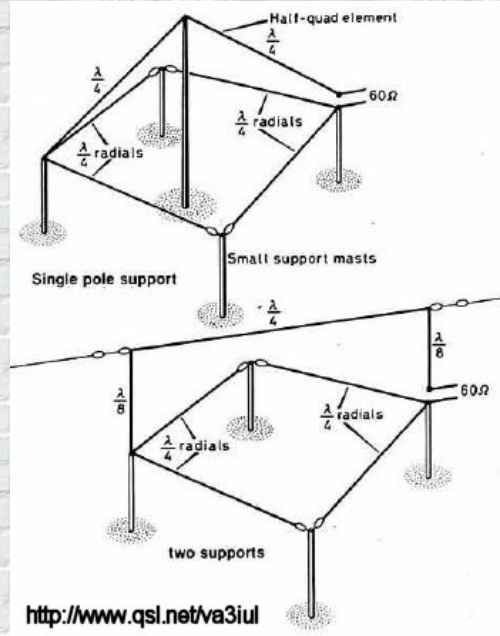
335 - Vertically Elongated Loop Antenna for 15m



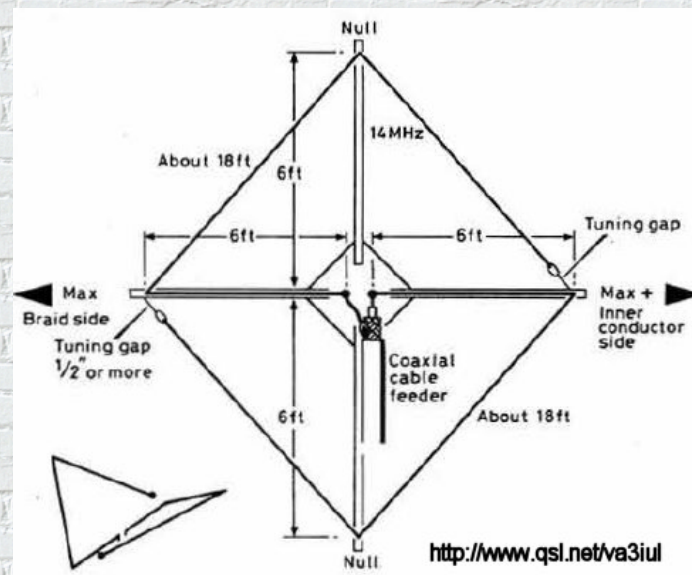
336 - Short Helical Wound Dipole for 15m



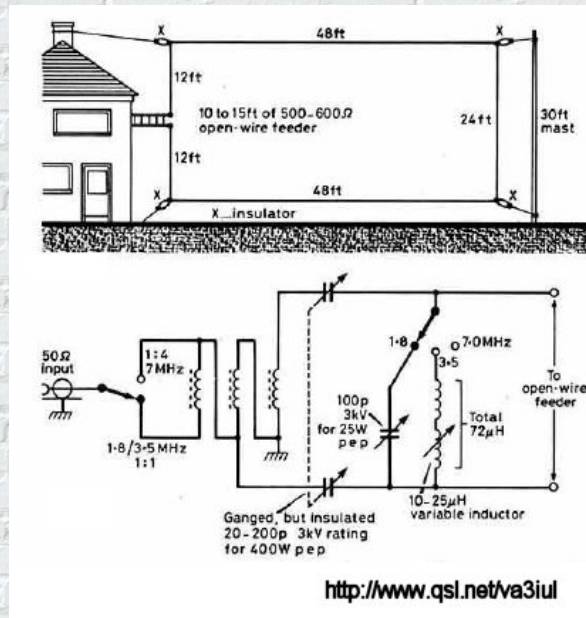
337 - Quadplane Antenna



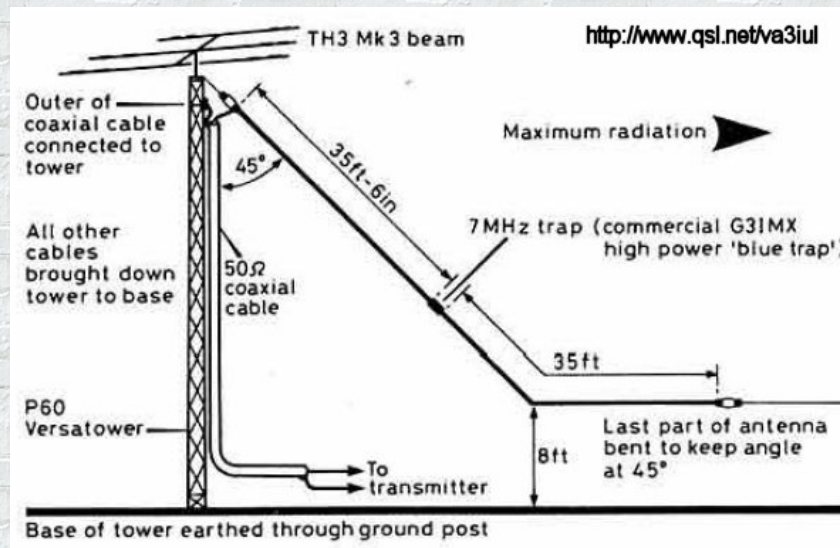
338 - Hibernating Directive Dipole for 20m



339 - H-Elongated V-Polarized Quadloop Antenna for 160m,80m,40m

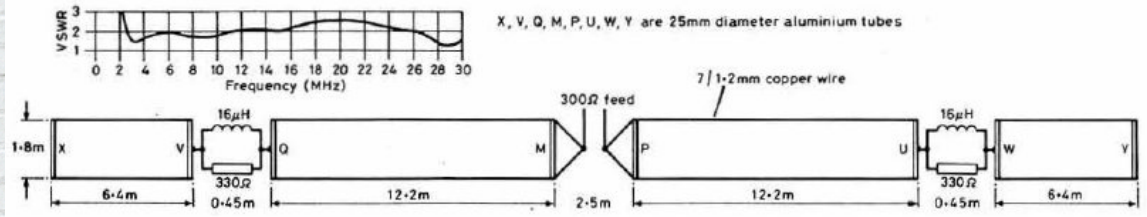


340 - Dual Band N/4 Sloper Antenna for 80m,40m



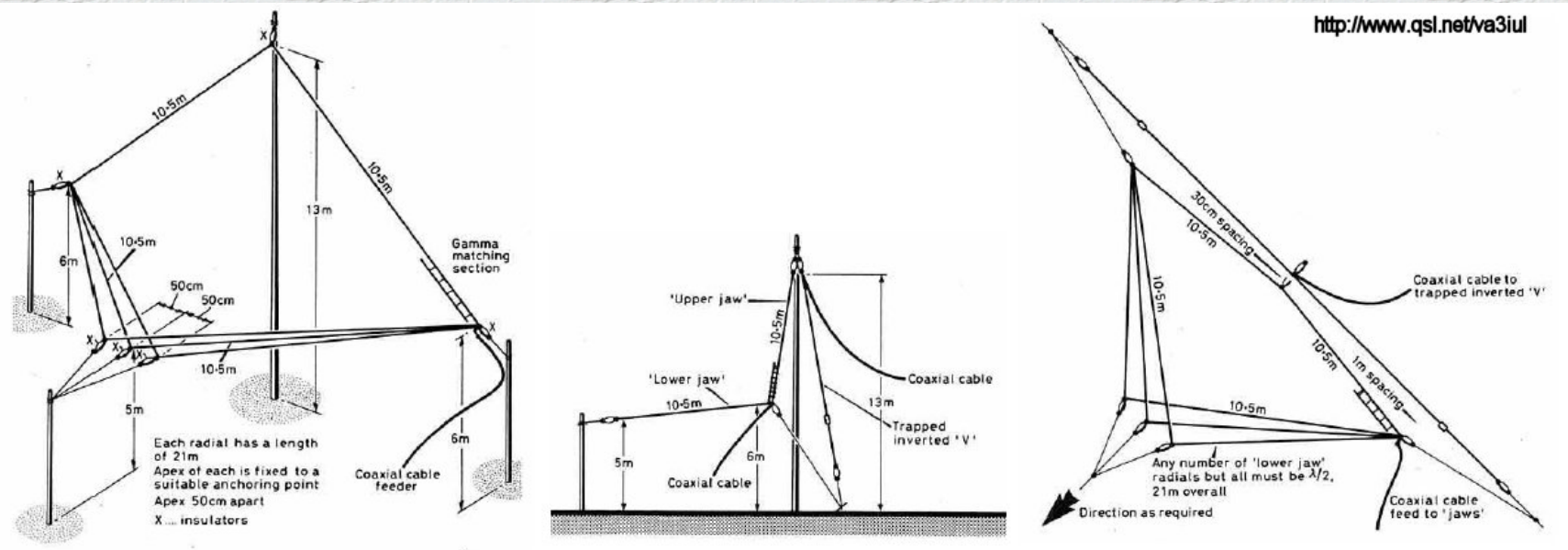
341 - Broadband Traveling-Wave Dipole for 80m to 10m

<http://www.qsl.net/va3iul>

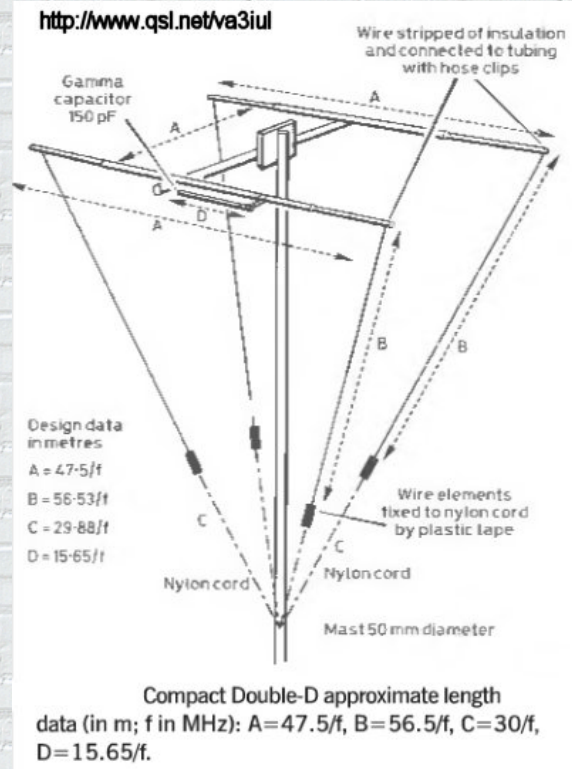


342 - Jaws Antenna for 40m

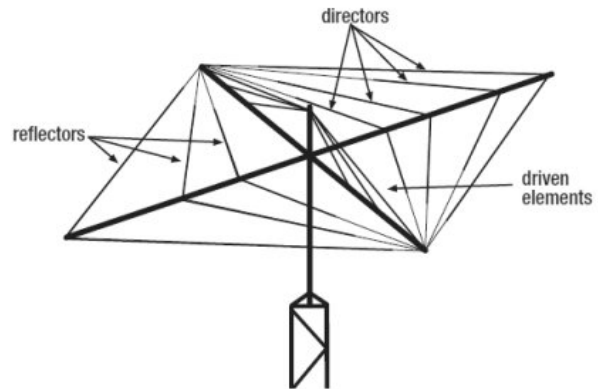
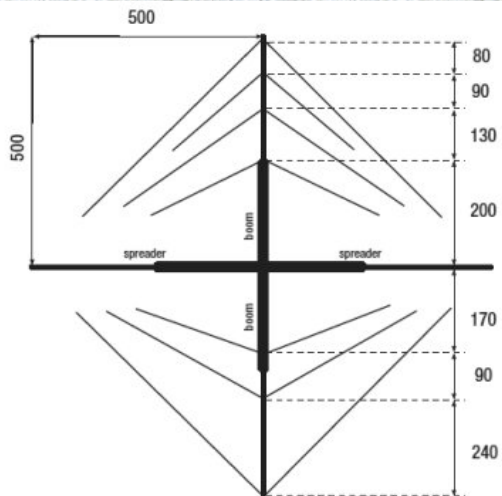
<http://www.qsl.net/va3iul>



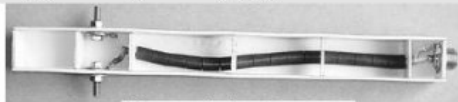
343 - Compact Double-D Antenna



344 - Portable Spiderbeam for 20m,15m,10m



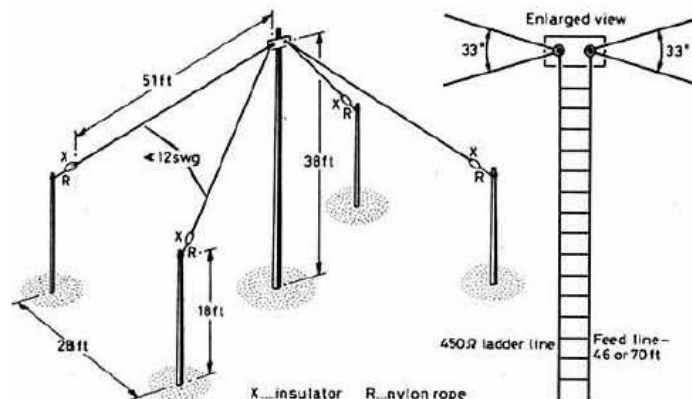
Band (m)	Reflector (cm)	Director 1 (cm)	Director 2 (cm)	Band (m)	Driven element (cm)	Forward gain in free space	F/S ratio (dB)	F/B ratio (dB)
20	1054	984	---	20	2 x 502	6.5 dBi (4.3 dBd)	12	15-20 across band
15	700	648	---	15	2 x 347	6.6 dBi (4.4 dBd)	15	18-25 across band
10	526	488	488	10	2 x 262	7.2 dBi (5.0 dBd)	18	20-30 across band



The coaxial cable choke.

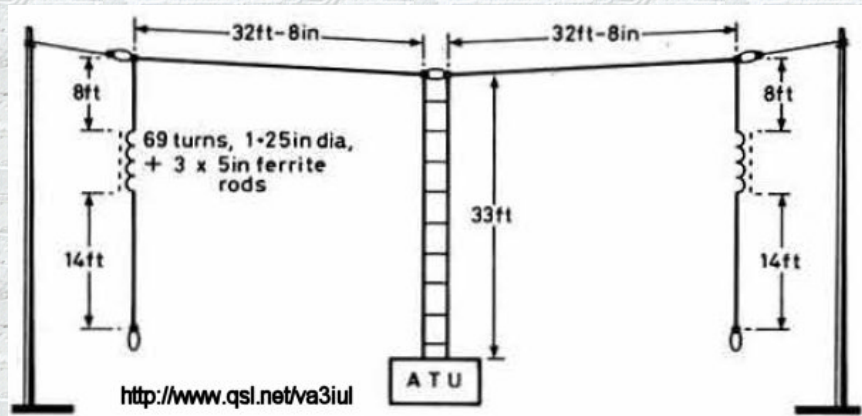
<http://www.qsl.net/va3iul>

345 - All Bands Cone Antenna

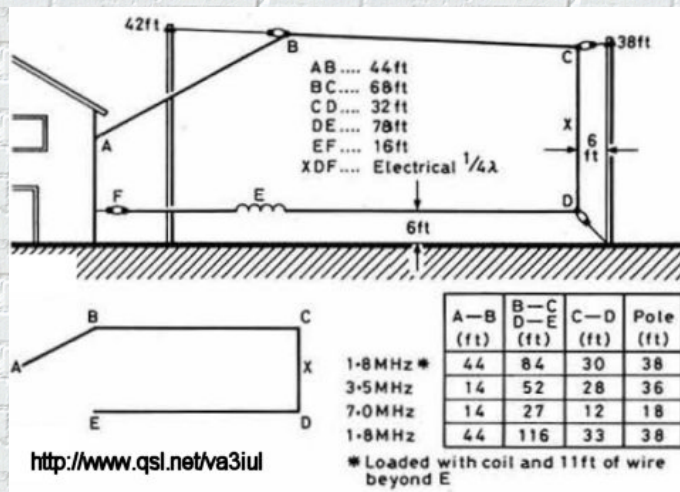


<http://www.qsl.net/va3iul>

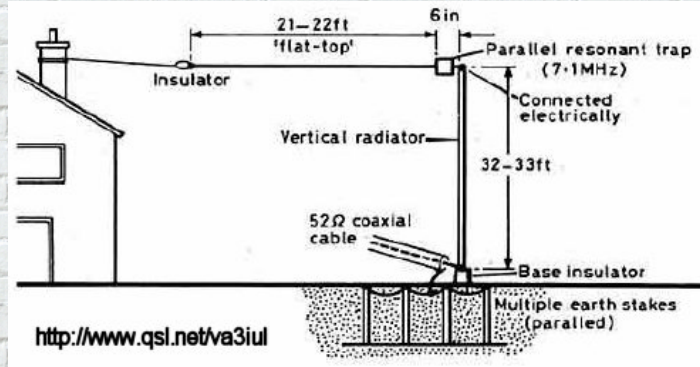
346 - Modified G5RV Antenna for 160m



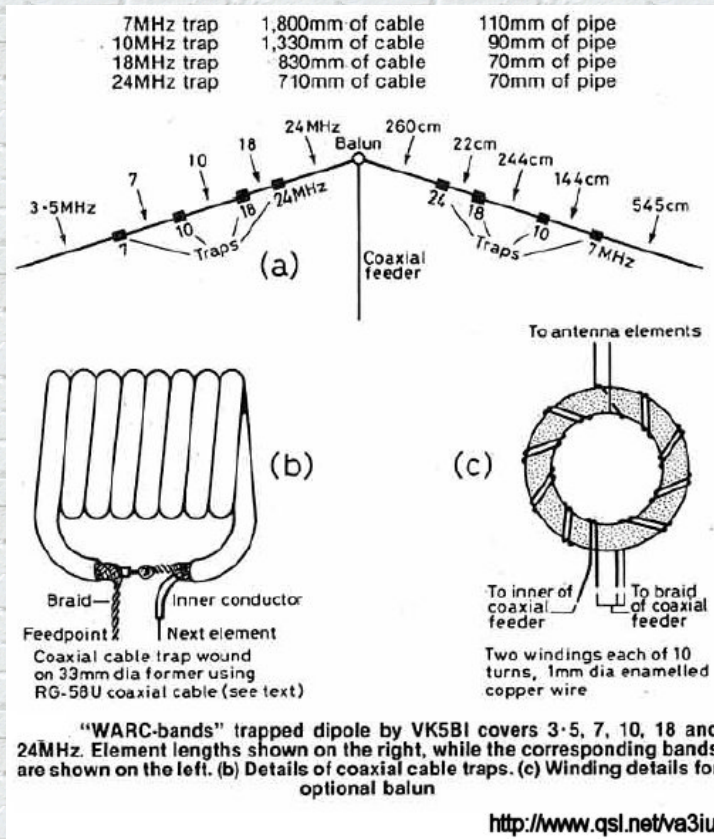
347 - Vertically Polarized Multiband Antenna for 160m,80m,40m



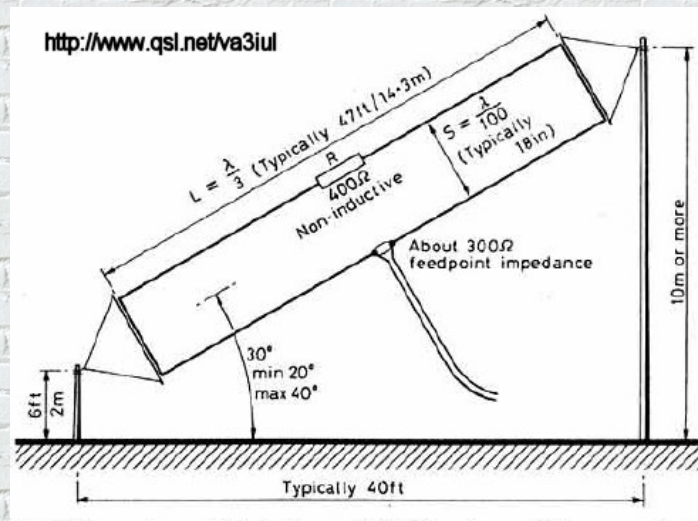
348 - Half-Trap DX Antenna for 80m,40m



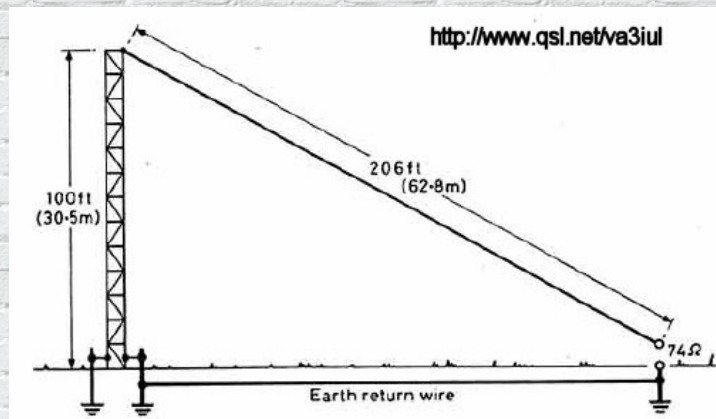
349 - WARC Bands Trapped Dipole for 80m,40m,30m,17m,12m



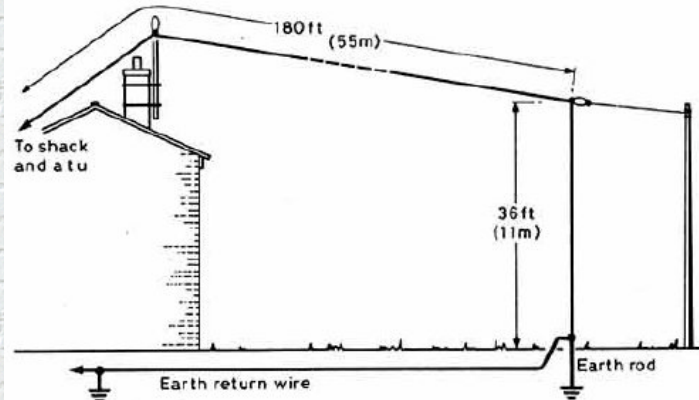
350 - T2FD Short Dipole Antenna for 80m,40m,20m



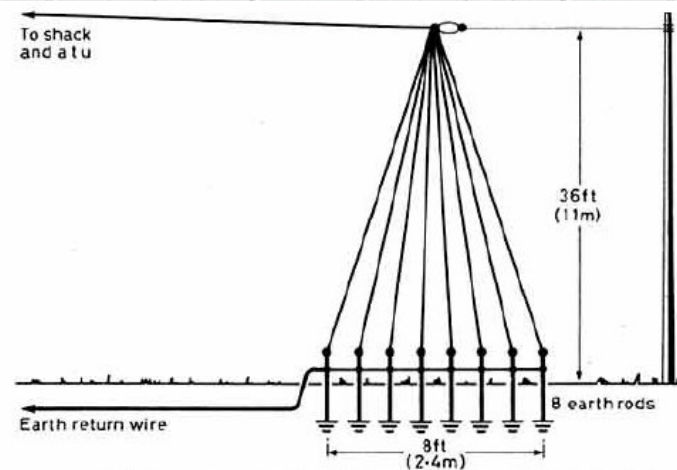
351 - Half Delta Loop Antenna VE2CV for 160m



352 - Grounded End-Fed Wire Antenna for 160m



The grounded end-fed wire antenna system derived from the half delta



An improved grounded system using the multi-wire "steeple"

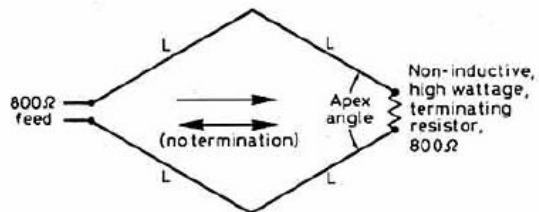
353 - Folded Dipole Coax Feeding

($\text{Lamda} / 2$) x Velocity Factor

MATERIAL	DIELECTRIC CONSTANT	VELOCITY FACTOR
Polyethylene	2.3	0.659
Foam polyethylene	1.3 - 1.6	0.88 - 0.79
Solid PTFE	2.07	0.695

<http://www.qsl.net/va3iul>

354 - High Gain Rhombic Antenna



The classic rhombic antenna array providing a unidirectional beam when terminated or bidirectional when there is no terminating resistor. L is normally at least one-wavelength long at the lowest operating frequency

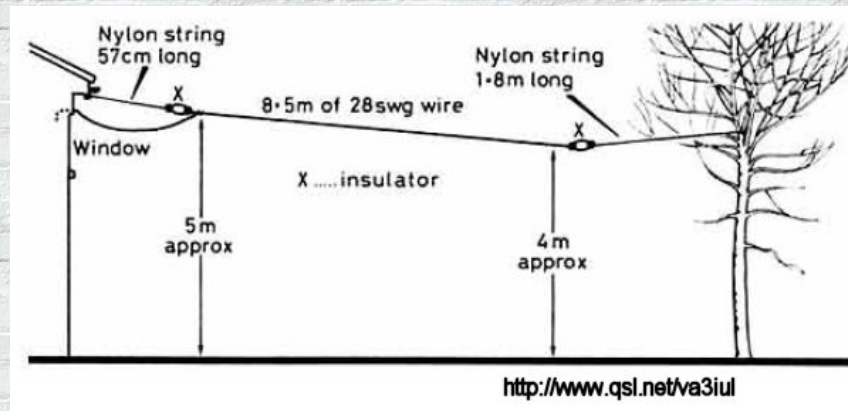
Bandwidth of rhombic antennas versus apex angle

Apex angle	f_{max}/f_{min}	L/λ for 10dB gain at f_{min}
36°	5.3	1.82
38°	5.1	1.73
40°	4.9	1.67
42°	4.7	1.60
44°	4.5	1.53
46°	4.3	1.48
48°	4.0	1.42
50°	3.7	1.36

Note: Minimum operating frequency is arbitrarily defined as the frequency at which the free-space gain is 4dB (ie the gain over ground is up to 10dB). Maximum operating frequency is defined as the frequency of maximum gain.

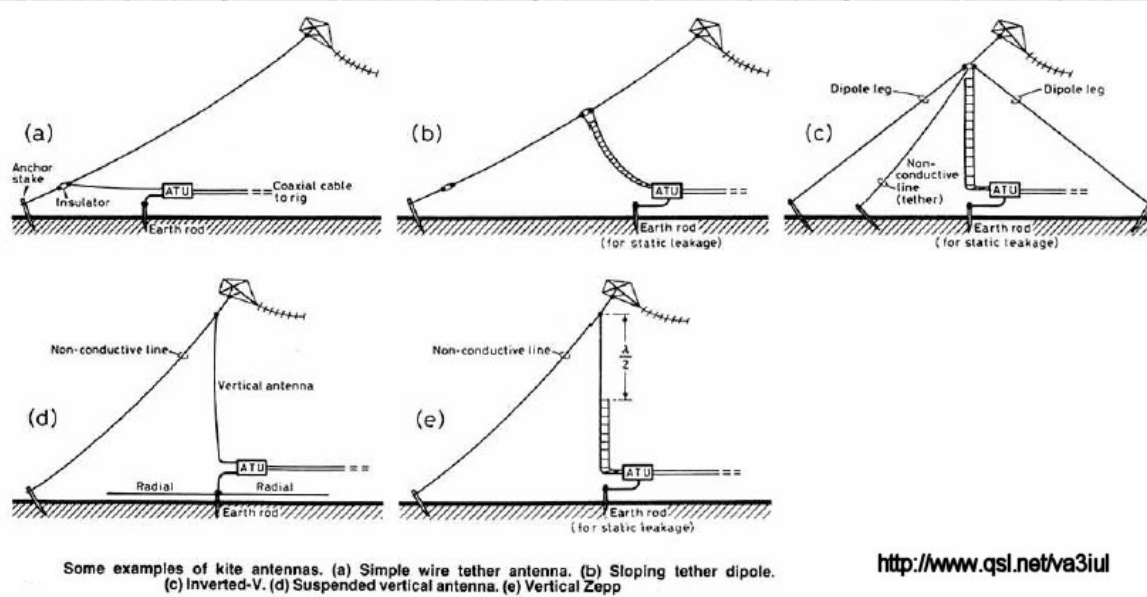
<http://www.qsl.net/va3iul>

355 - Long Wire Antenna for 6m



<http://www.qsl.net/va3iul>

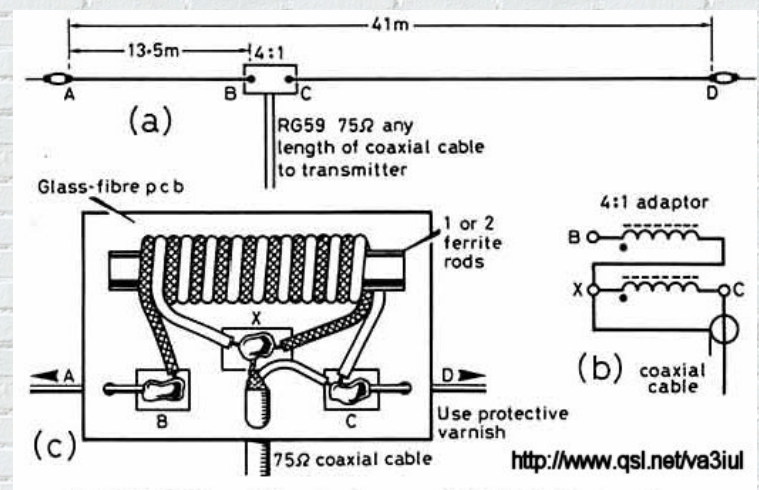
356 - Kite Antennas



Some examples of kite antennas. (a) Simple wire tether antenna. (b) Sloping tether dipole. (c) Inverted-V. (d) Suspended vertical antenna. (e) Vertical Zepp

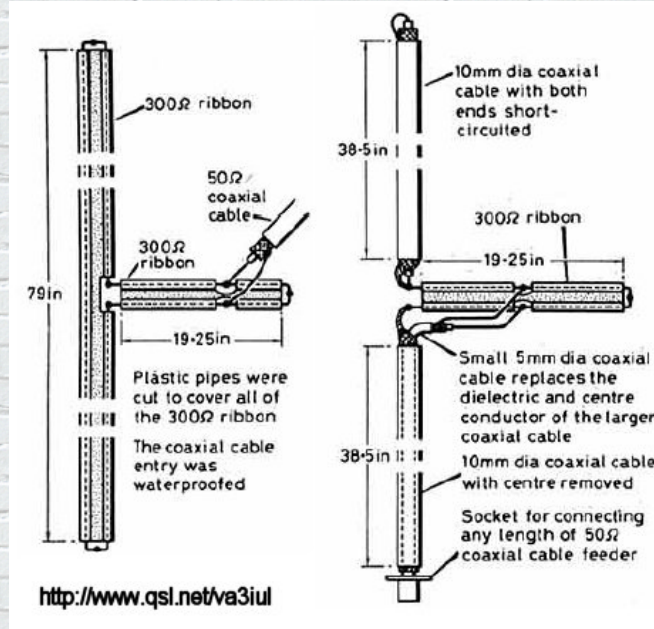
<http://www.qsl.net/va3iul>

357 - Multiband Window with Balun for 80m to 10m

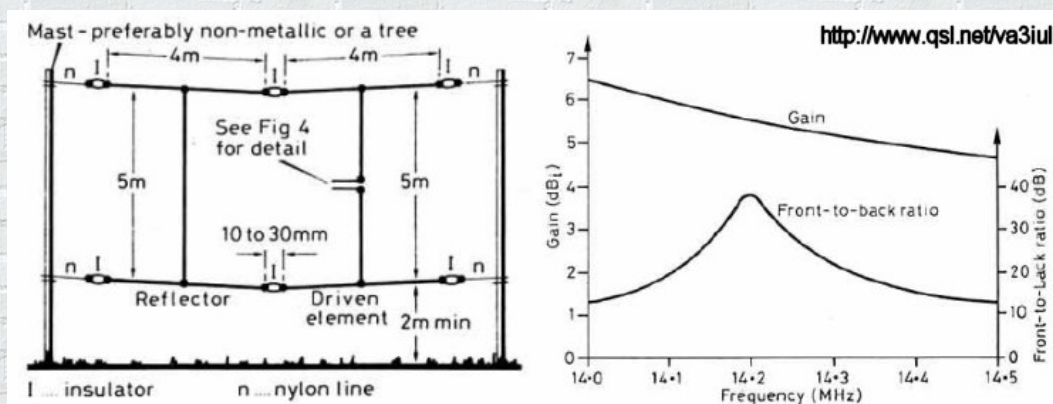


<http://www.qsl.net/va3iul>

358 - Portable Collinear Antenna GM3LBX for 2m

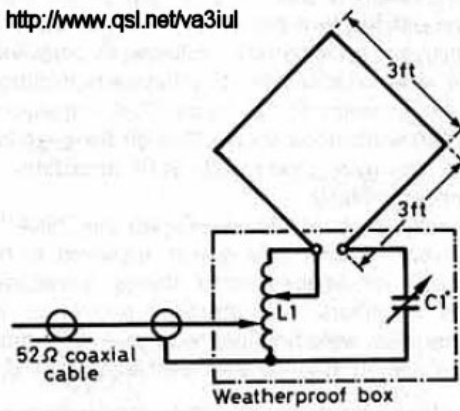


359 - Two-Elements Loaded Yagi for 20m



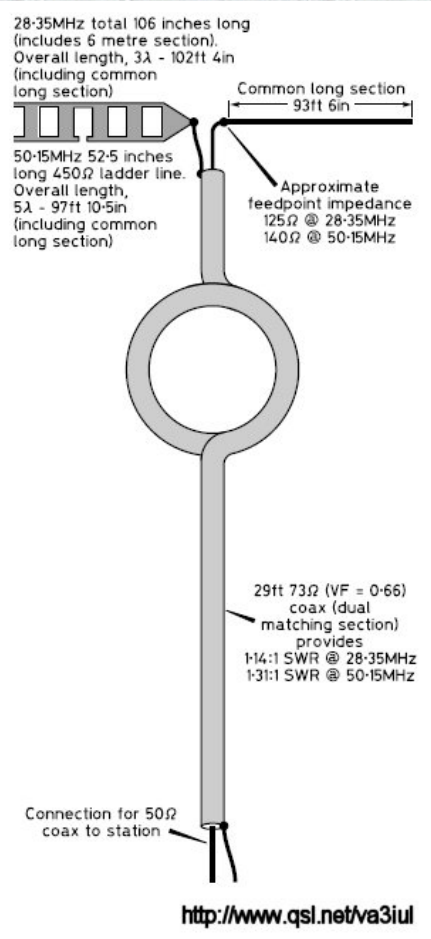
360 - Horizontal Plane TX Loop Antenna for 40m

<http://www.qsl.net/va3iul>

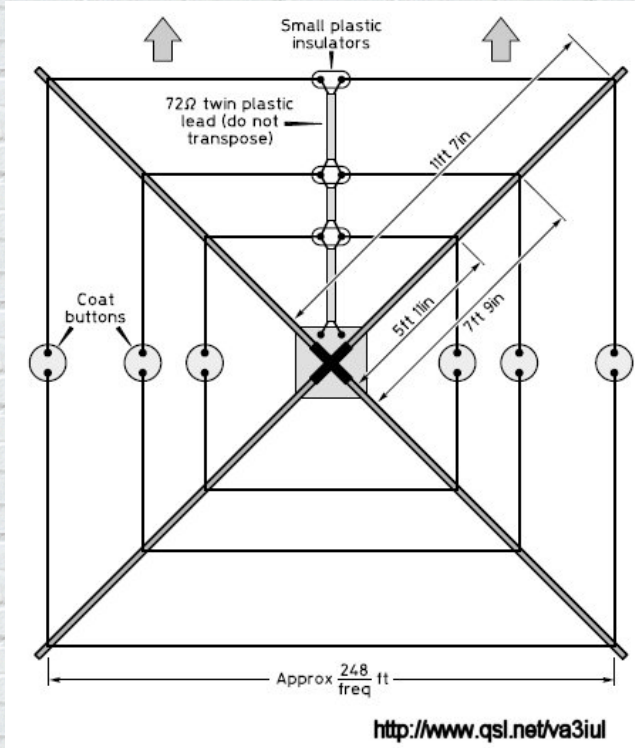


The 1952 horizontal-plane 'transmitting loop' of W4LW was simply connected in series with a conventionally tuned circuit. For a loop with 3ft sides at 7MHz, L1 had an inductance of $2.5\mu\text{H}$ and C1 a maximum capacitance of about 150pF (high-voltage spacing).

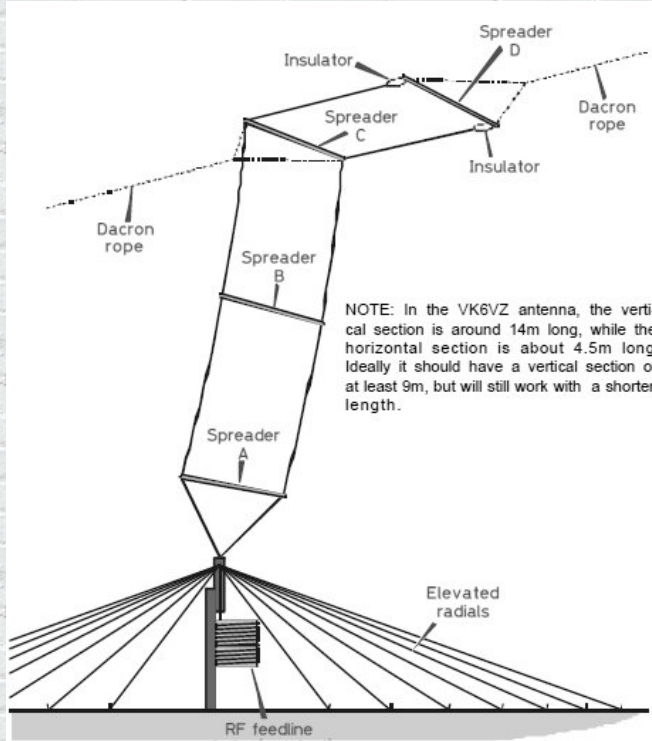
361 - Long Wire Antenna W3RW for 10m,6m



362 - Tri-Band Wire Beam VK2ABQ for 20m,15m,10m



363 - Glen Forest Marconi Antenna for 80m,30m,17m,12m



Four 1m-long pieces of 12mm-diameter wooden dowel are used to space the two parallel wires that make up the antenna - one close to the feedpoint, the second in the centre of the vertical section, the third at the top of the vertical section and the fourth close to the antenna's far end.

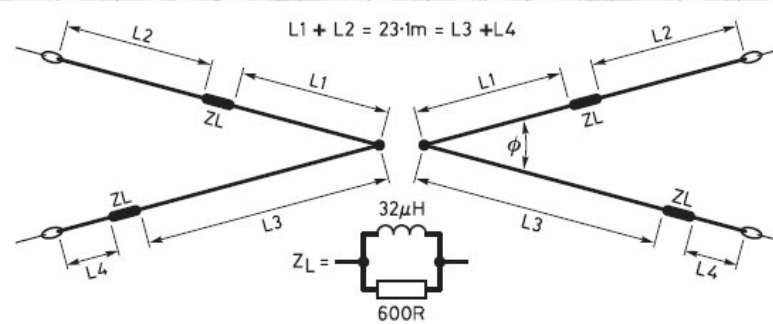
Over each end of the first three spacers are slid 10cm lengths of 'split' 10mm diameter PVC reticulation tubing, which serve as insulators. The fourth spacer has a plastic/nylon egg insulator attached at each end using a 5mm-thick cable tie, which serves to insulate the far ends of the antenna.

A 2.5-metre length of 1cm-diameter Dacron rope is attached to the ends of the far end antenna spacer (Spacer D), and the far-end antenna halyard is attached to the centre of the piece of Dacron rope.

The antenna is fed with a length of RG-213 50-ohm coaxial cable, via an RF feedline choke consisting of 20 turns of RG-213 cable wound on a 20cm diameter plastic former (made from an empty chlorine bucket). This choke helps to prevent feedline radiation, in particular on the 3.5MHz band. A more expensive alternative would be the use of ferrite beads at the feedpoint; however, no trace of series resonance has been found on the four bands.

<http://www.qsl.net/va3iul>

364 - Broadband Inverted-V Antenna for 80m to 10m



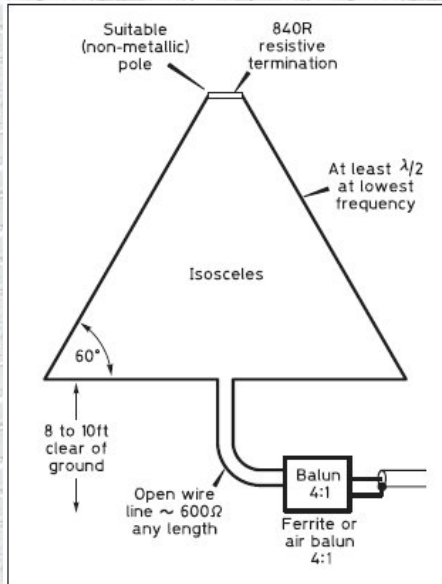
Broadband inverted-V form of HF antenna developed in South Africa covering 3 to 30MHz with good radiation efficiency when fed from 500Ω line. Unlike the Australian dipole no aluminium spacers are required. Key dimensions:

$L1 + L2 = L3 + L4 = 23.1\text{m}$
 $L1 = 13.5\text{m}$ (hence $L2 = 9.6\text{m}$)
 $L3 = 17\text{m}$ (hence $L4 = 6.1\text{m}$)

<http://www.qsl.net/va3iul>

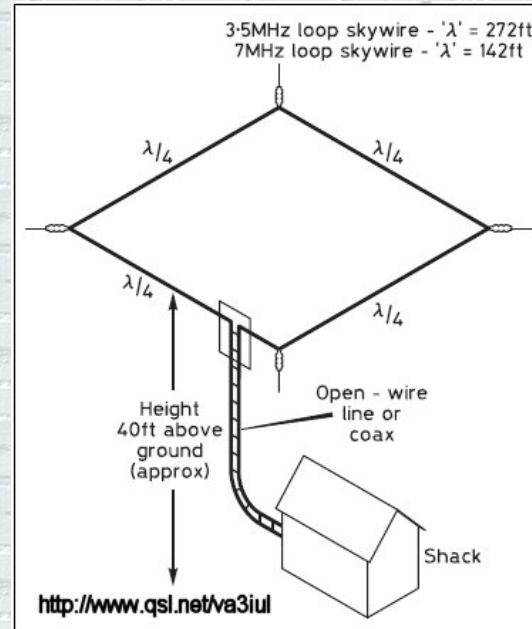
The included angle, ϕ , does not markedly affect the VSWR, but the feedpoint impedance is dependent to some extent, 5° optimum yields 500Ω, reducing to about 400Ω at near-zero spacing. A range of 3 to 30MHz with a VSWR of less than 2.5 can be achieved.

365 - Broadband Terminated Delta Loop



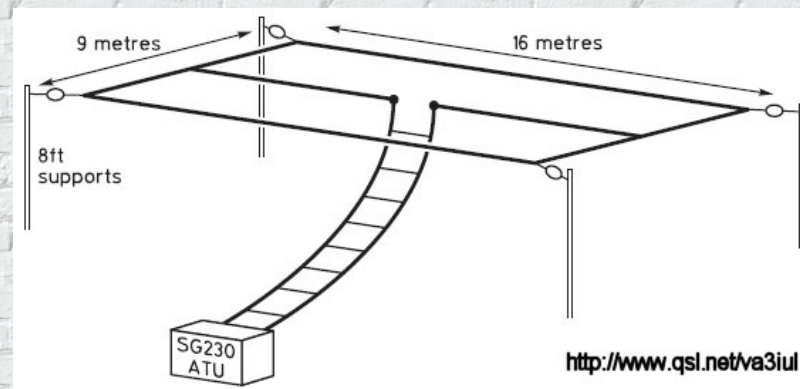
The broadband Terminated Delta Loop HF antenna with maximum radiation towards the zenith. The 840Ω resistive termination can comprise 24 2W resistors in four strings of six (each 560Ω) inside a 2in plastic pipe open at the ends (100W RF limit). Higher-rated termination needed for use with QRO linears. Termination value and balun match may be varied to optimise VSWR excursion over range of frequencies used.

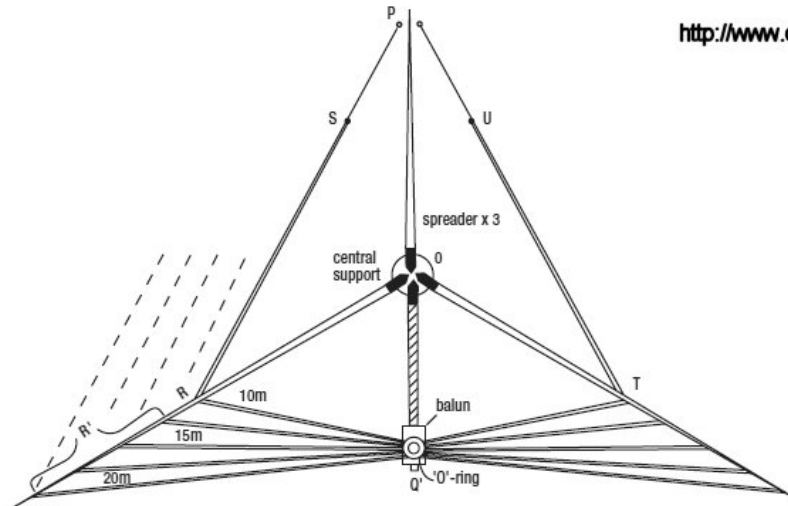
366 - Skywire Loop Antenna for 80m,40m



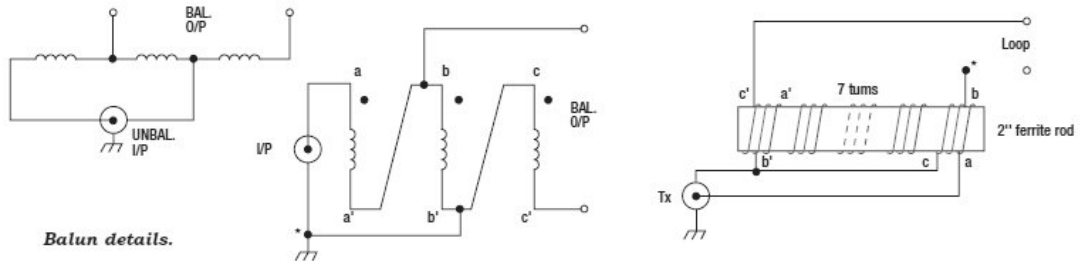
NT0Z advises: Put up the largest horizontal loop your site can support while keeping the 'loop' as square as possible. Don't worry about perfect symmetry [or resonance but try to preserve balance to earth - G3VA]. Loop could be scaled down for 14MHz and above.

367 - Rectangular Loop Antenna for 80m

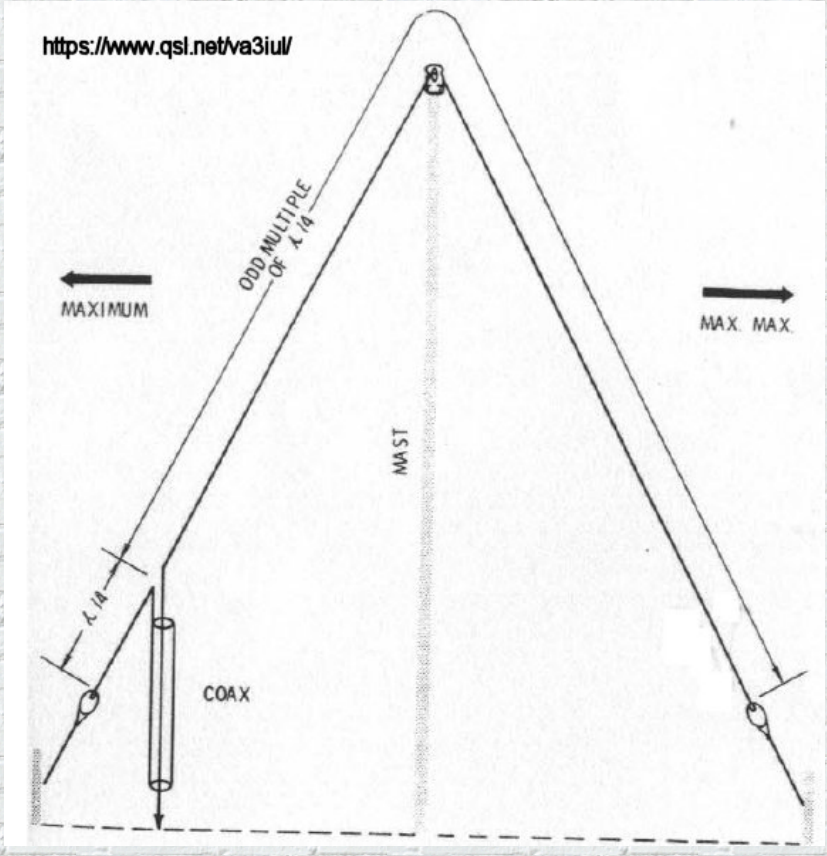




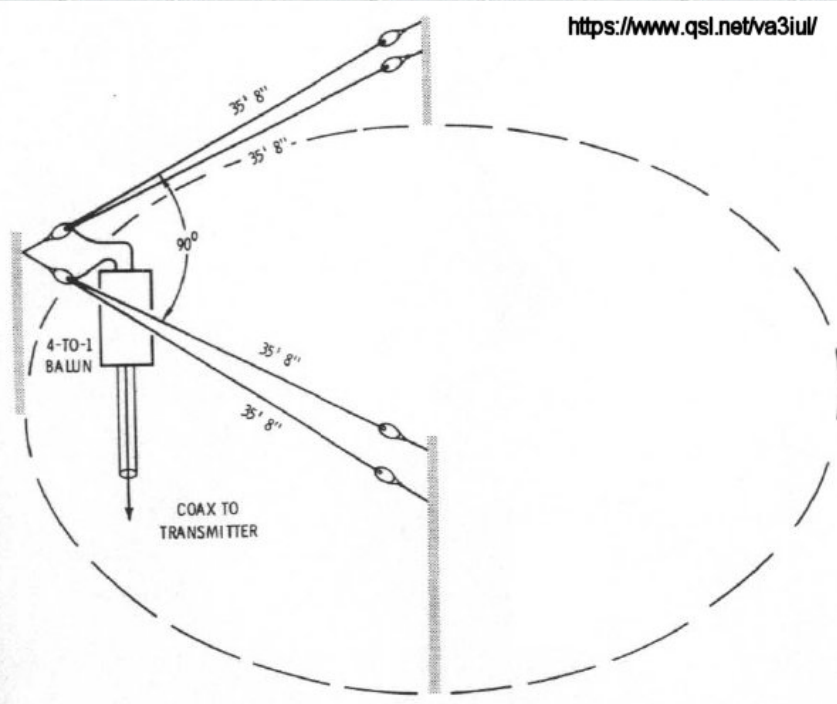
Design f (MHz)	$QRS = QTU = 358/2f$	$QR = 504/6f$	$OR = QR/\cos 30^\circ$	Extra for fan-out	$Q'R' (QR + \text{extra bit})$	$SP = UP = 73/f$	Extra $5/f$ to adjust f	$SP' = UP' = 78/f$
14.175	12' 7 $\frac{1}{2}$ " (+2")	5' 11" (+1")	6' 10"	1 $\frac{1}{4}$ "	6' 1 $\frac{1}{4}$ "	5' 1 $\frac{3}{4}$ "	4"	5' 4 $\frac{1}{4}$ "
18.110	9' 10 $\frac{1}{2}$ " (+2")	4' 7 $\frac{1}{2}$ " (+1")	5' 4 $\frac{1}{4}$ "	$\frac{1}{4}$ "	4' 8 $\frac{3}{4}$ "	4' 0 $\frac{1}{2}$ "	3 $\frac{1}{2}$ "	4' 2 $\frac{1}{4}$ "
21.225	8' 5 $\frac{1}{4}$ " (+2")	3' 11 $\frac{1}{2}$ " (+1")	4' 6 $\frac{3}{4}$ "	0"	4' 0 $\frac{1}{2}$ "	3' 5 $\frac{1}{4}$ "	3"	3' 7"
24.940	7' 2" (+2")	3' 4 $\frac{1}{2}$ " (+1")	3' 10 $\frac{1}{2}$ "	$\frac{1}{4}$ "	3' 5 $\frac{3}{4}$ "	2' 11"	2 $\frac{1}{2}$ "	3' 0 $\frac{1}{2}$ "
28.300	6' 4" (+2")	2' 11 $\frac{1}{2}$ " (+1")	2' 5 $\frac{1}{4}$ "	$\frac{1}{2}$ "	3' 1"	2' 7"	2"	2' 8 $\frac{1}{4}$ "



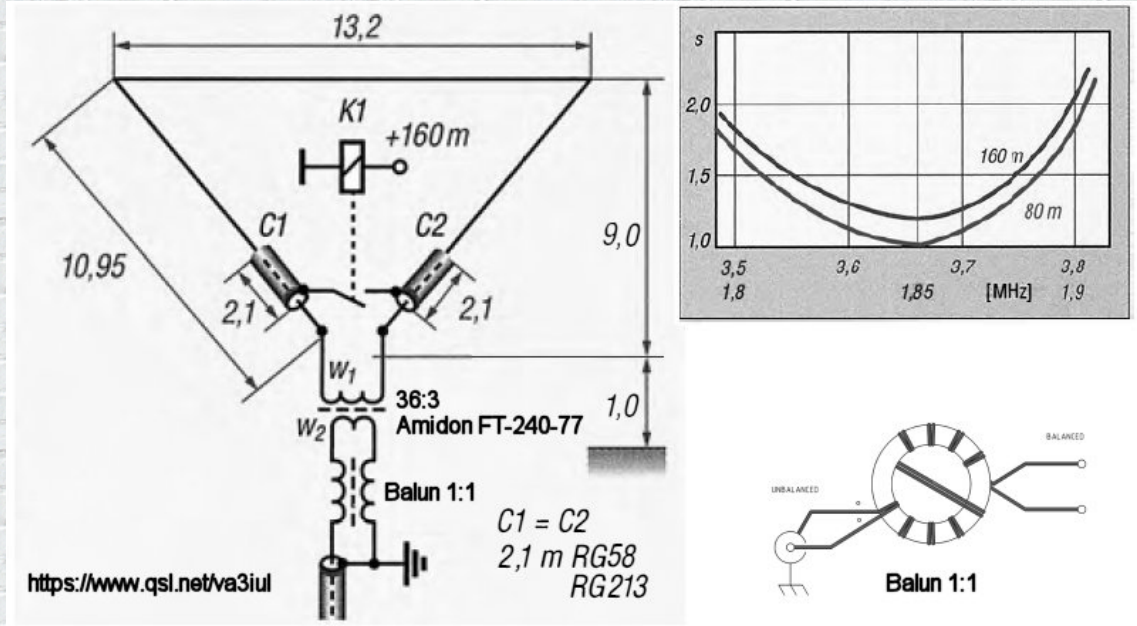
369 - End-Fed Inverted-Vee Beam



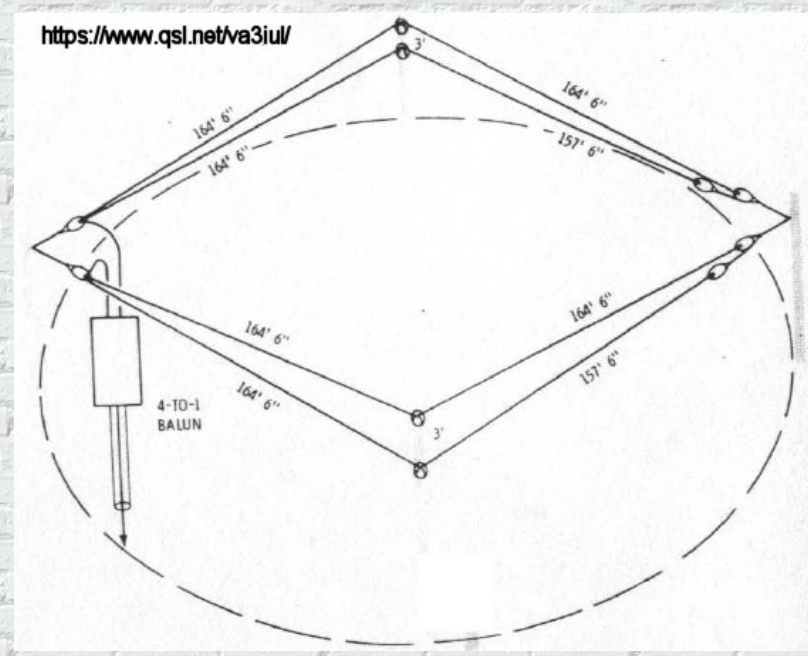
370 - Conical Vee with Balun for 40m,15m



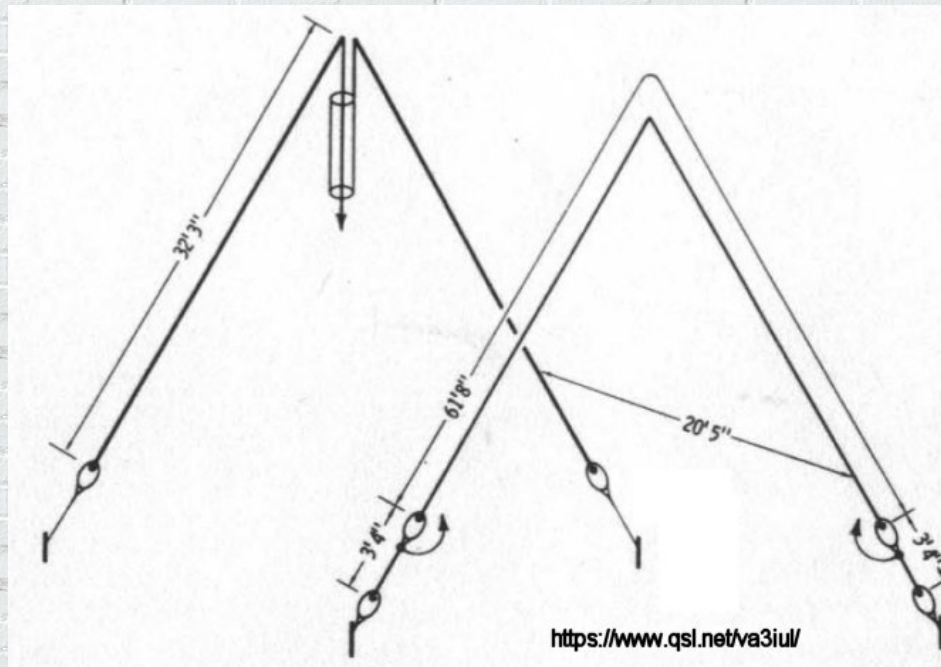
371 - Vertical Delta Loop Antenna for 160m,80m



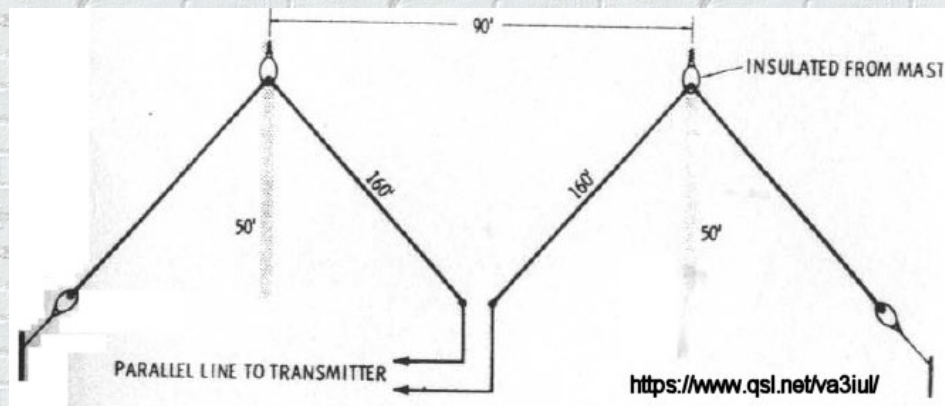
372 - Two Wire Resonant Rhombic Antenna for 20m,15,10m



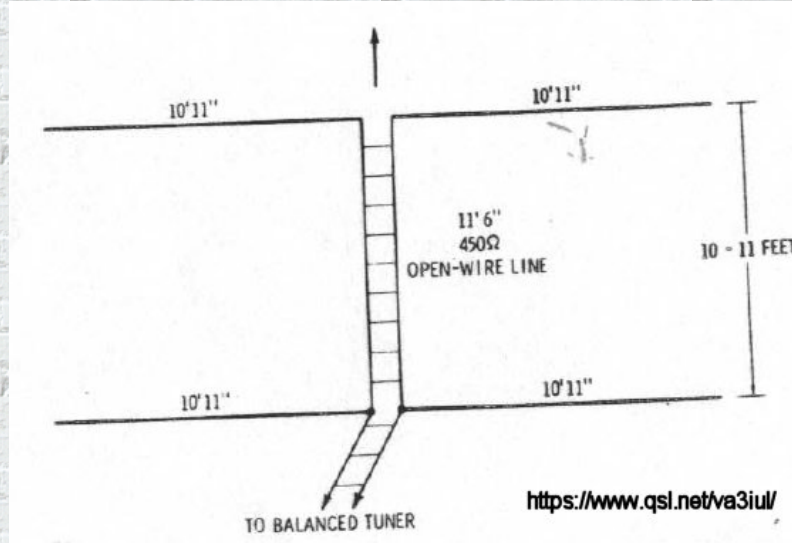
373 - Inverted-Vee with Parasitic Reflector for 40m



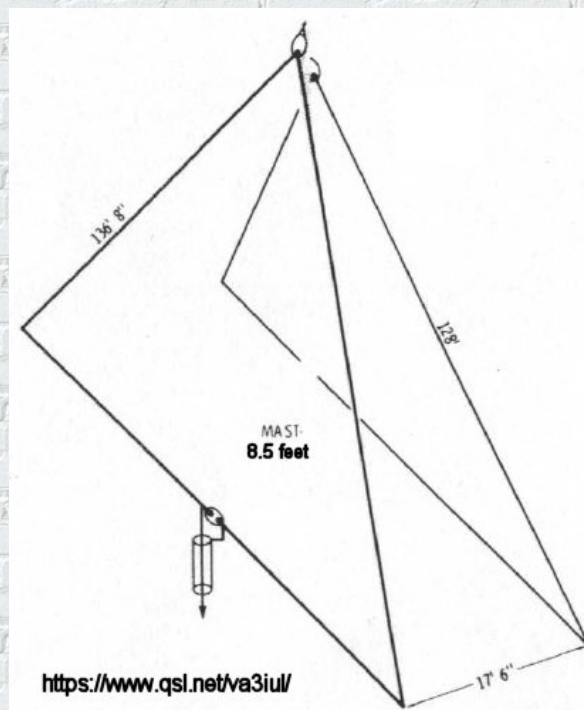
374 - Acute Angle Inverted-Vee Antenna for 160m to 10m



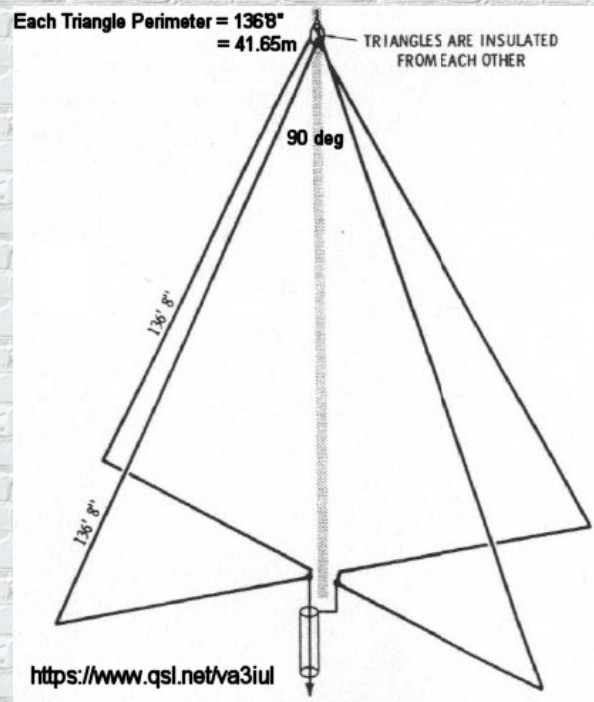
375 - Open-Wire End-Fire Beam for 15m, 10m



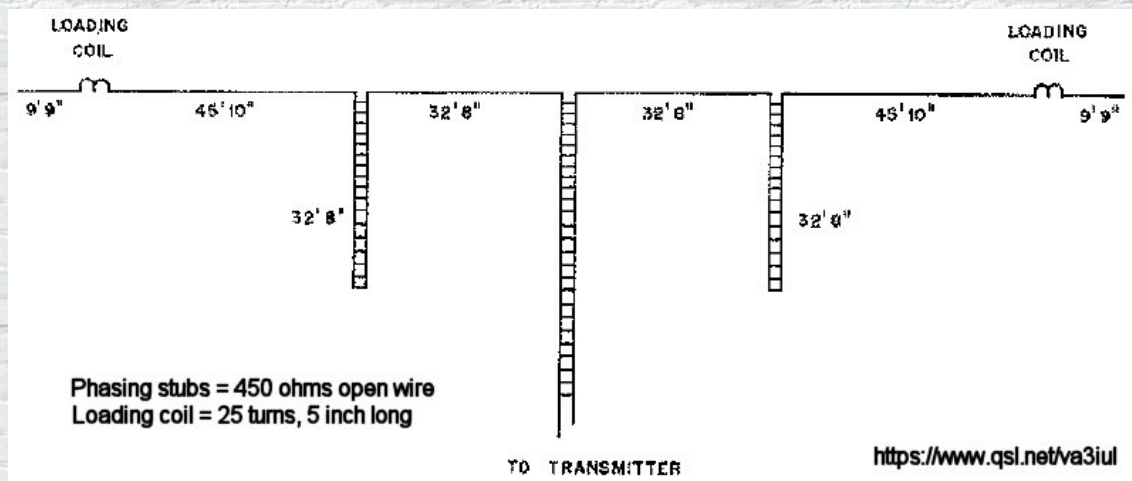
376 - Single Mast Two-Element Delta Loop for 40m



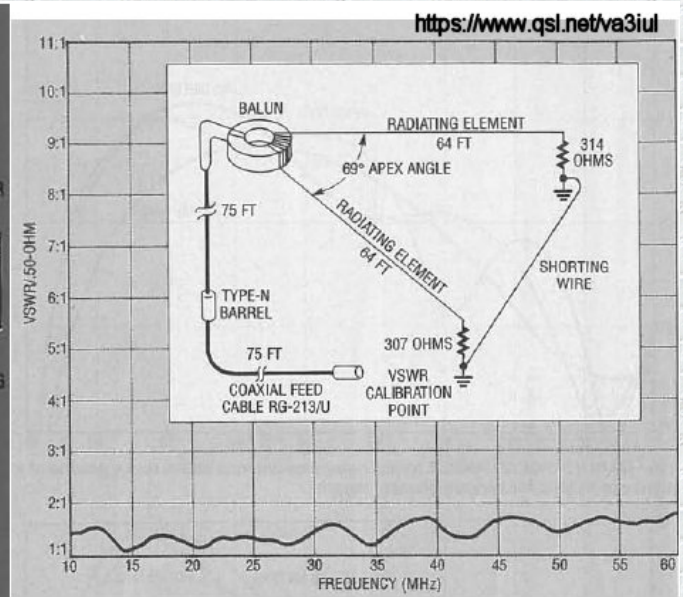
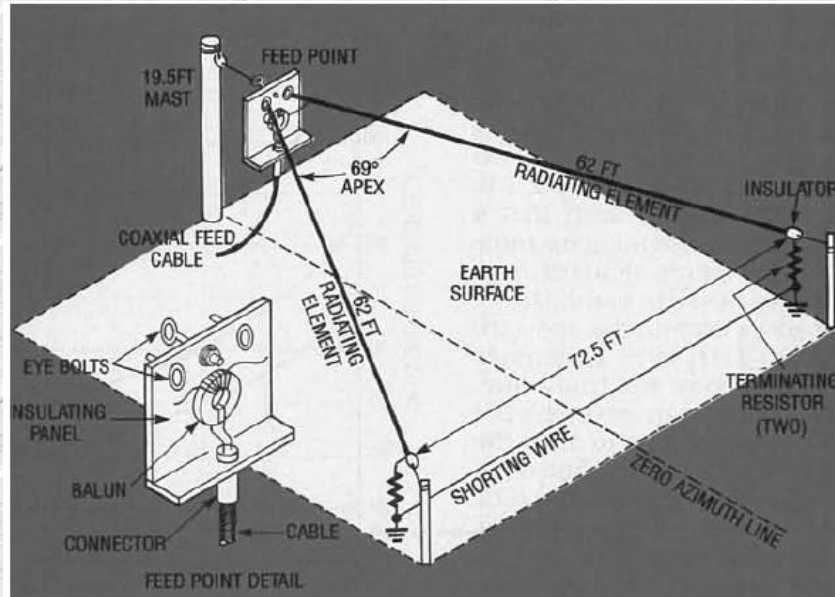
377 - Dual Band Turnstile Triangle Antenna for 80m,40m



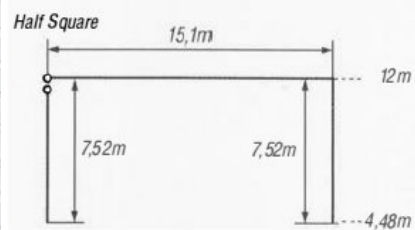
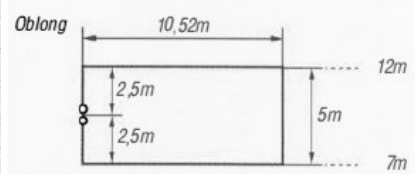
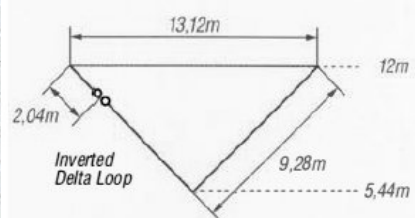
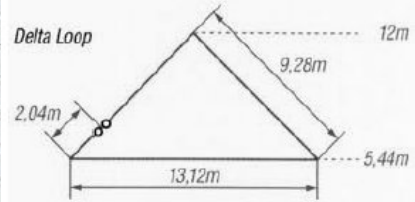
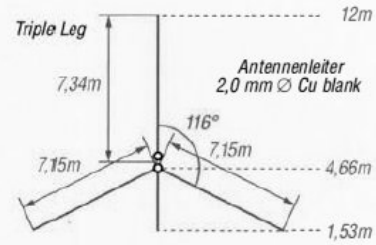
378 - Three-Band Short Antenna for 160m,80m,40m



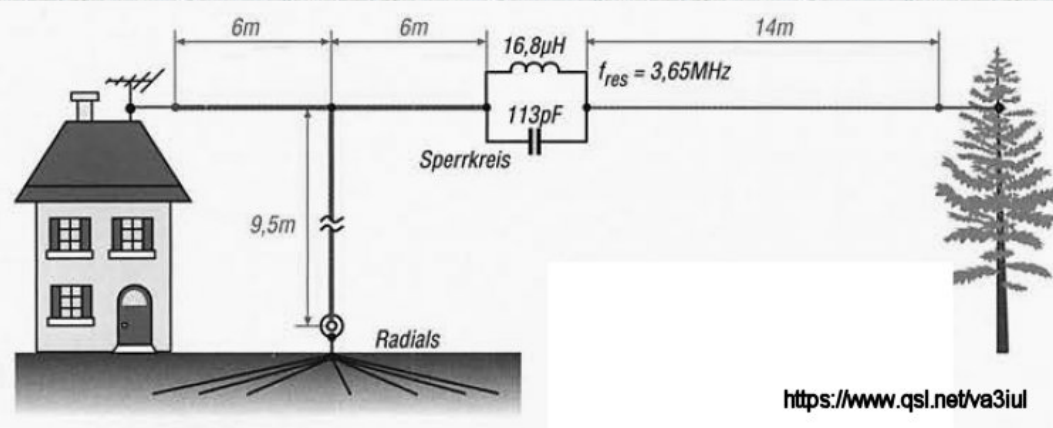
379 - Sloping-Vee Antenna for 80m to 6m



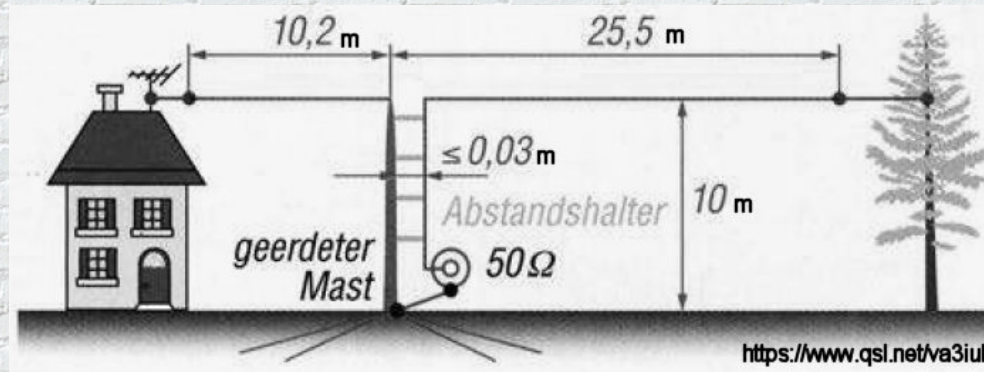
380 - Five DX Antennas for 30m



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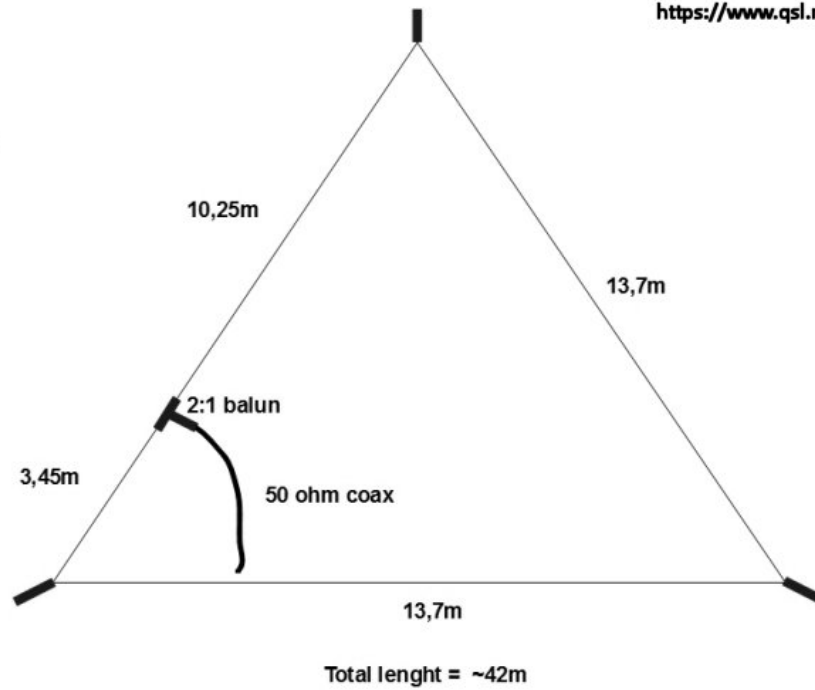


382 - L-Ant for 160m, 80m

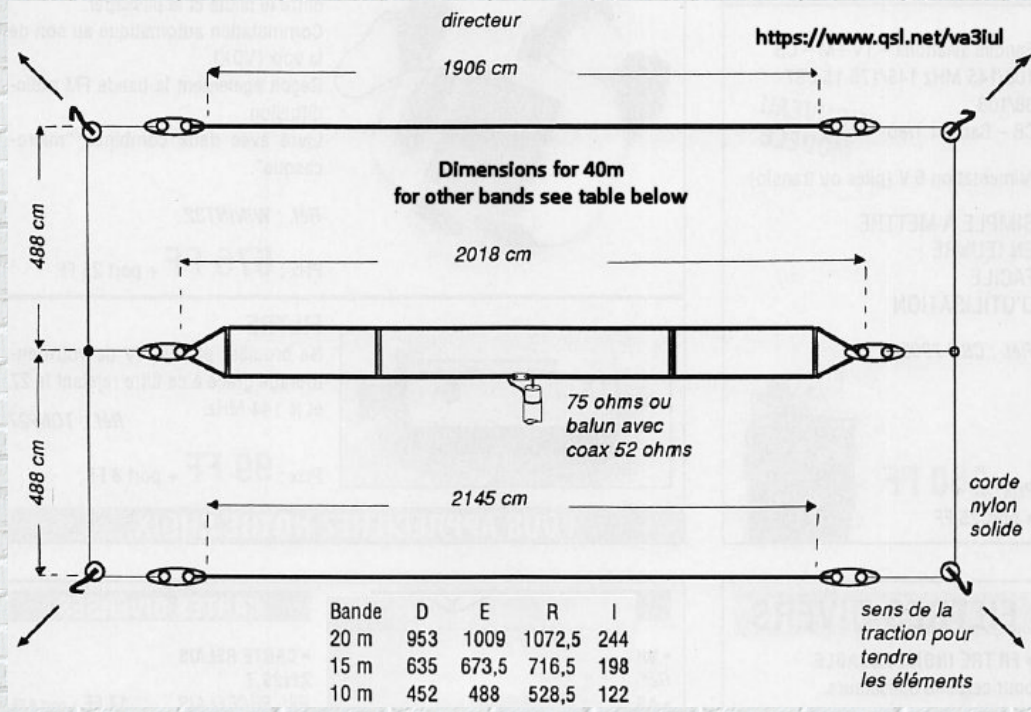


383 - Monoband Delta Loop for 40m

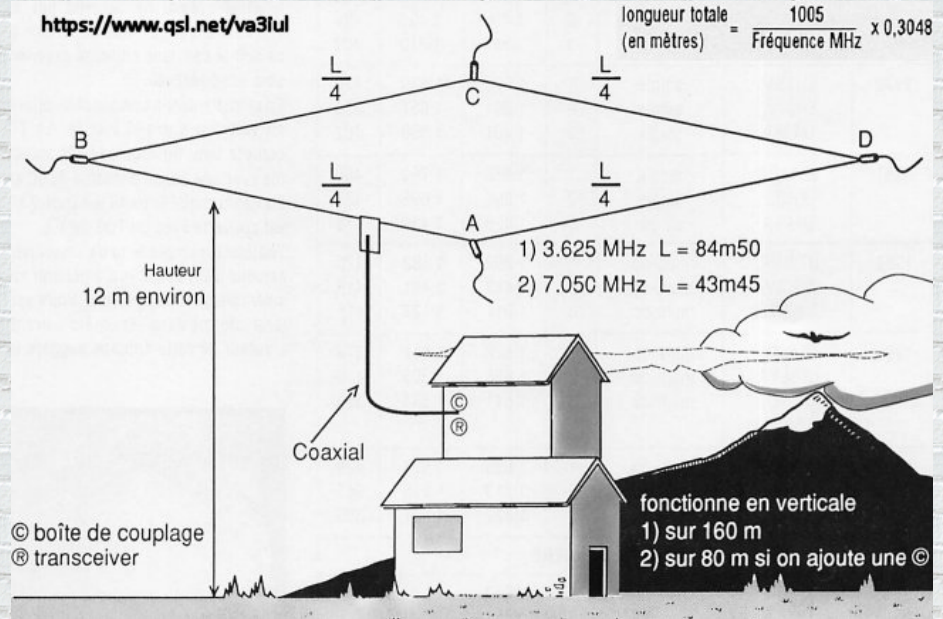
Monoband
Full size 40m
Wire delta loop
Vertical polarized
Max power 2Kw



384 - Single-Band Wire Beam Antenna for 40m,20m,15m,10m



385 - Rhombic Beam Antenna for 80m, 40m



386 - Inverted-V Antenna for 80m, 40m, 30m

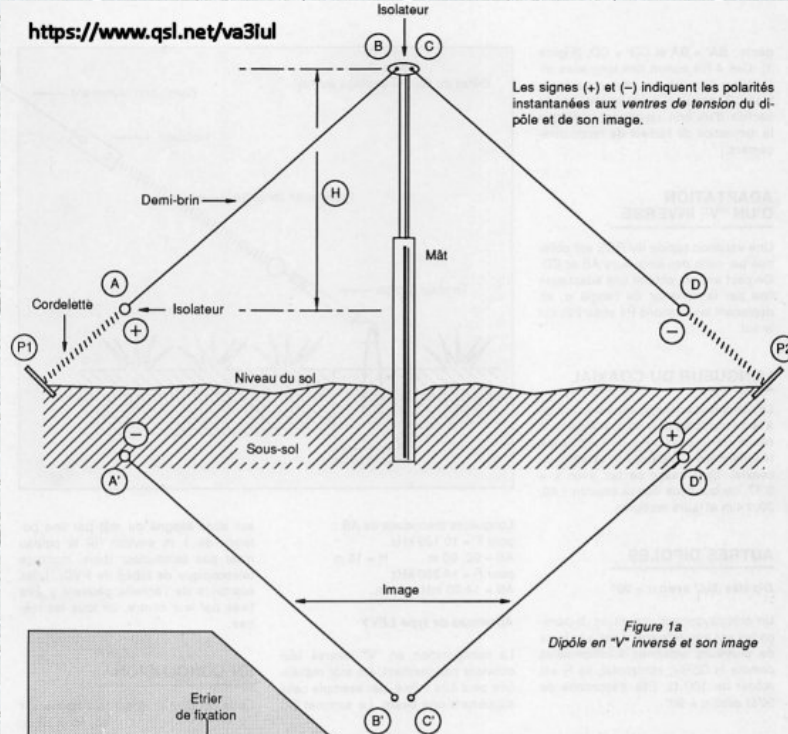


Figure 1a
Dipôle en "V" inversé et son image

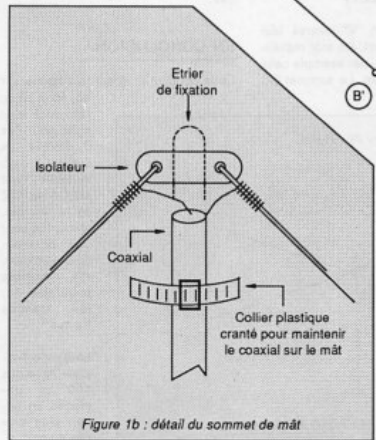


Figure 1b : détail du sommet de mât

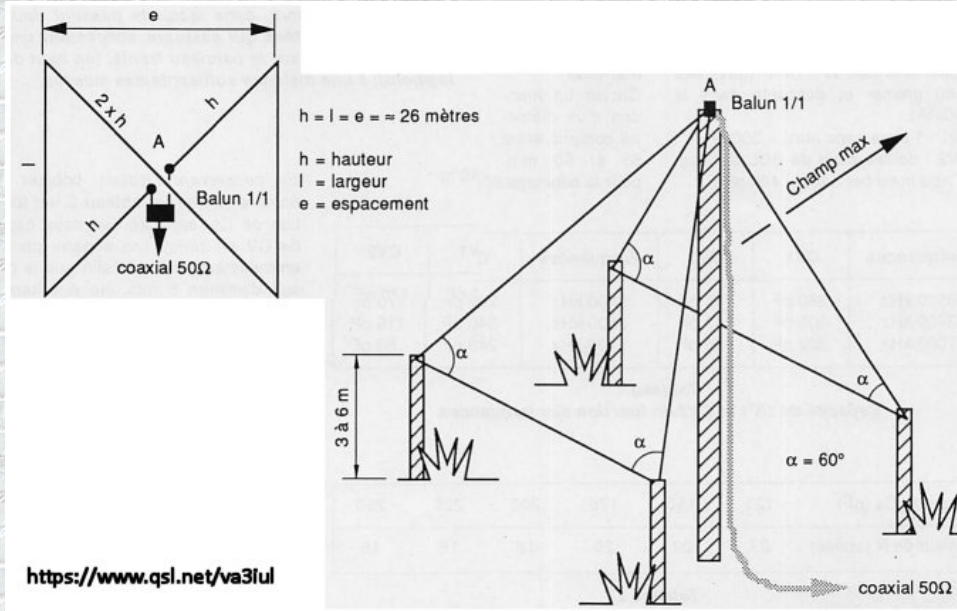
Fréq MHz	Longueurs AB	Hauteur H
3,650	19,44	10,00
3,700	19,18	10,00
7,050	10,06	5,1
7,070	10,04	5,1
10,125	7,00	3,6

Tableau 1 : Dipôle $\lambda/2$ avec $\alpha = 120^\circ$

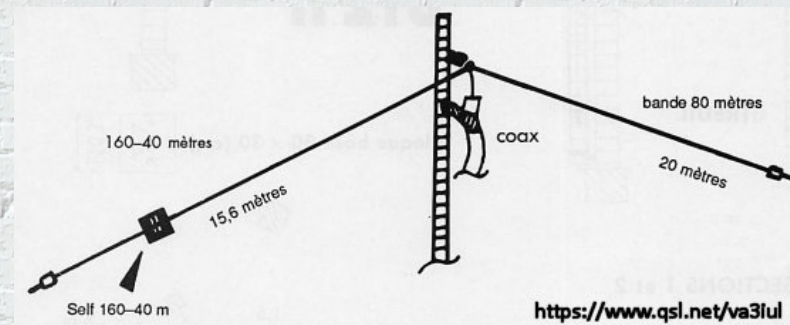
Fréq MHz	Longueurs AB	Hauteur H
3,650	19,34	13,8
3,700	19,08	13,8
7,050	10,01	7,2
7,070	9,98	7,2
10,125	6,97	5,1

Tableau 2 : Dipôle $\lambda/2$ avec $\alpha = 90^\circ$

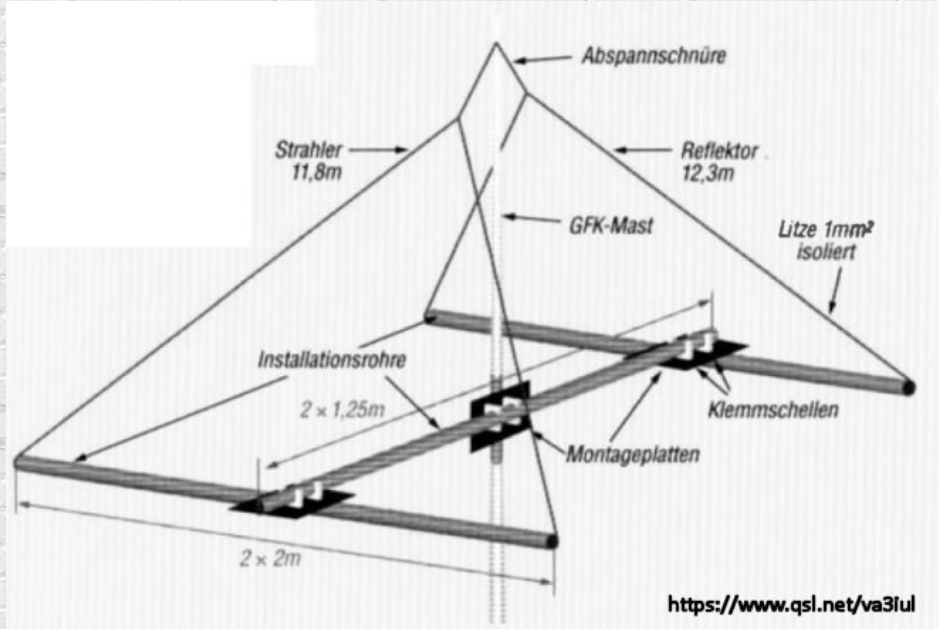
387 - Directive Delta Loop Antenna for 160m



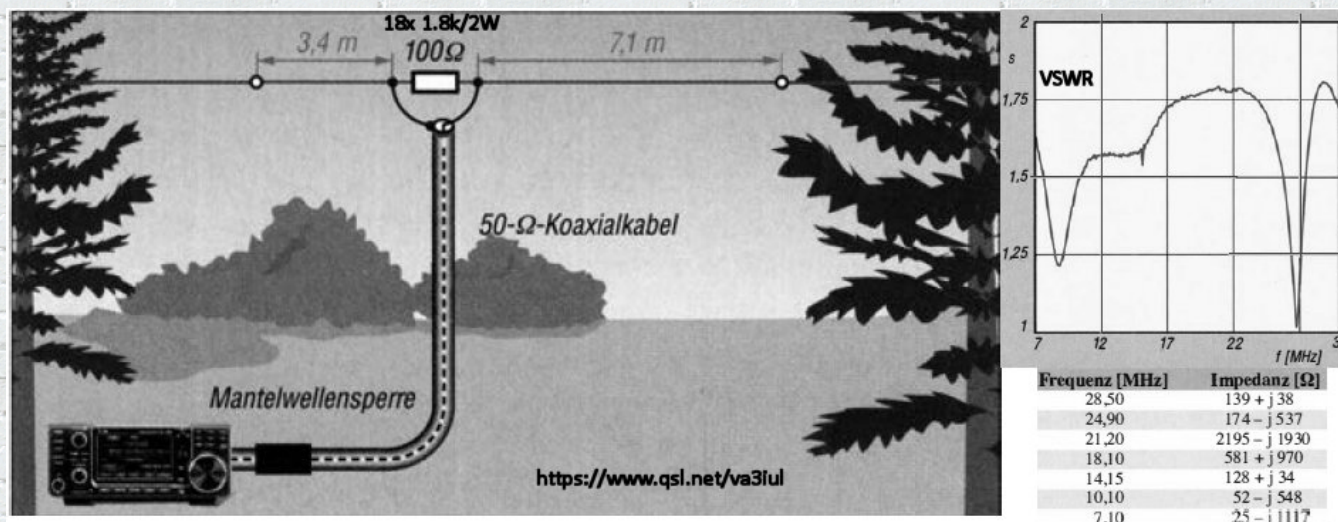
388 - Simple Sloper DXA Antenna for 160m to 40m



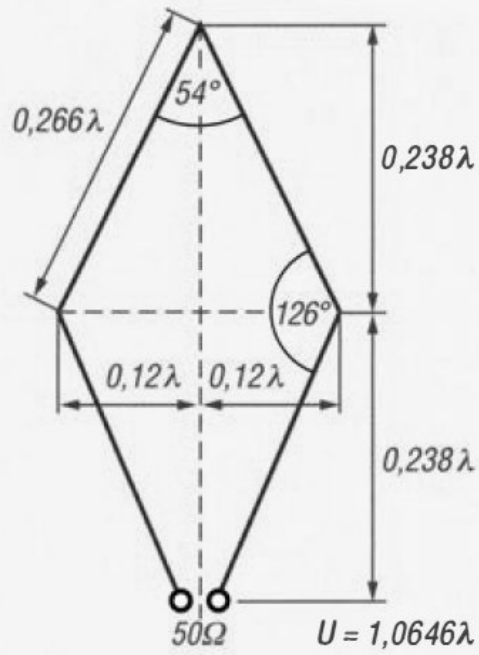
389 - 2x Element Delta Loop for 12m



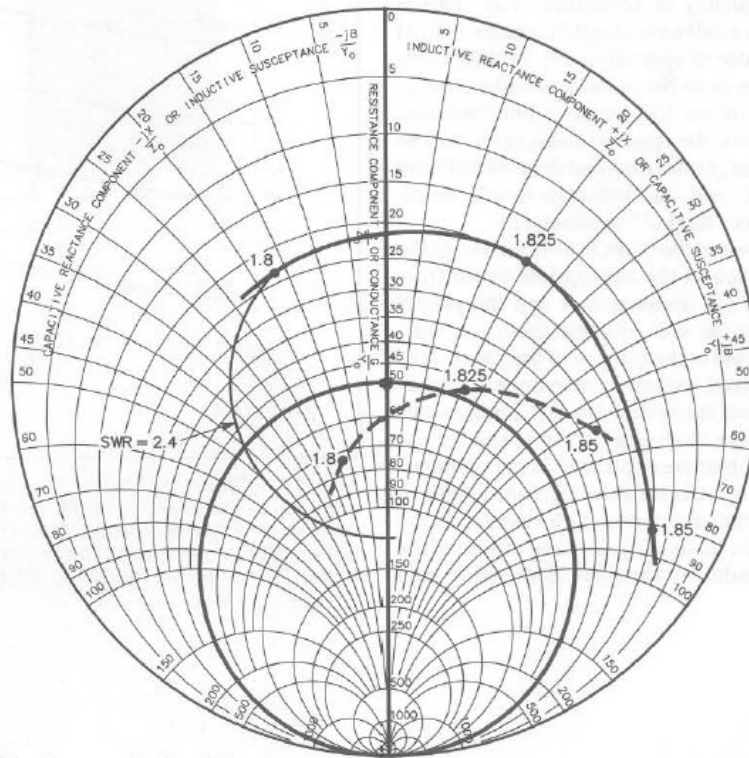
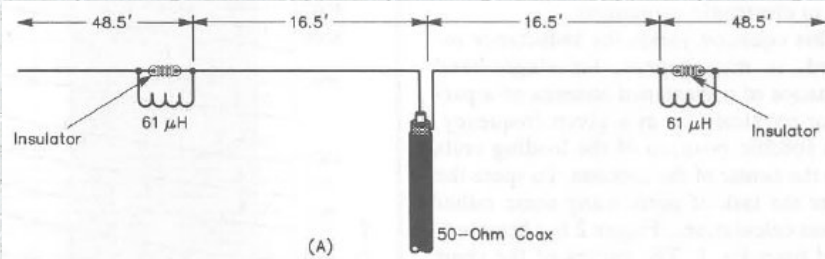
390 - Multiband Short Antenna for 40m to 10m



391 - Vertical Rhombic Antenna



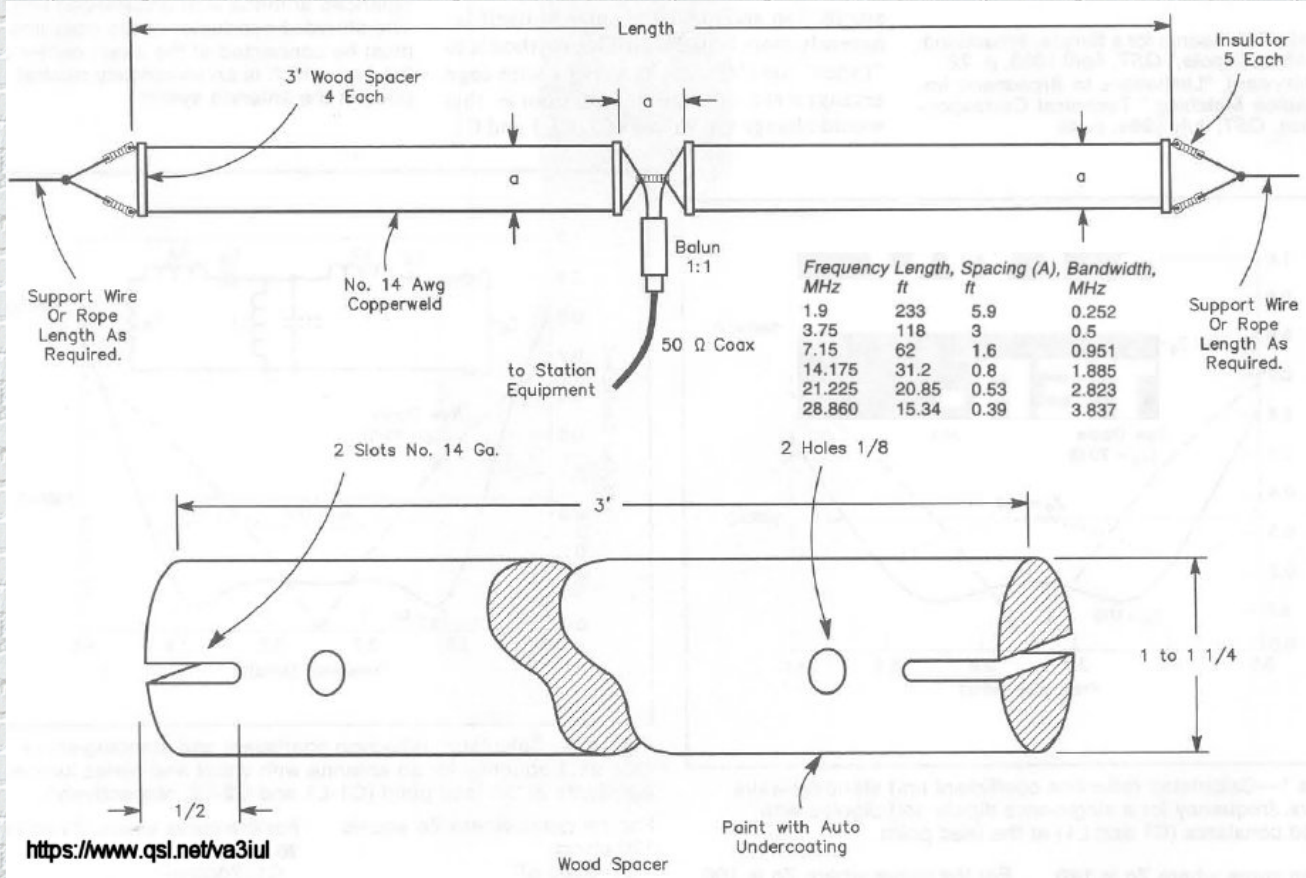
392 - Loaded Dipole Antenna for 160m



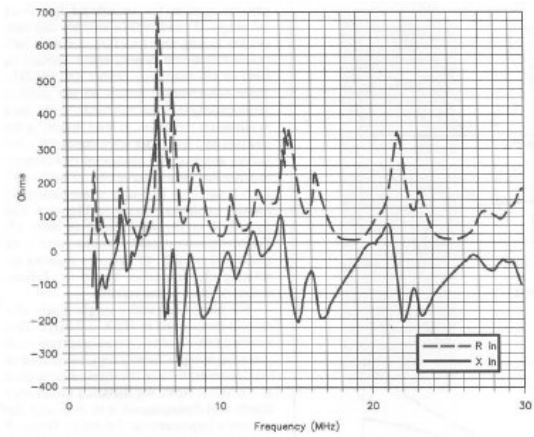
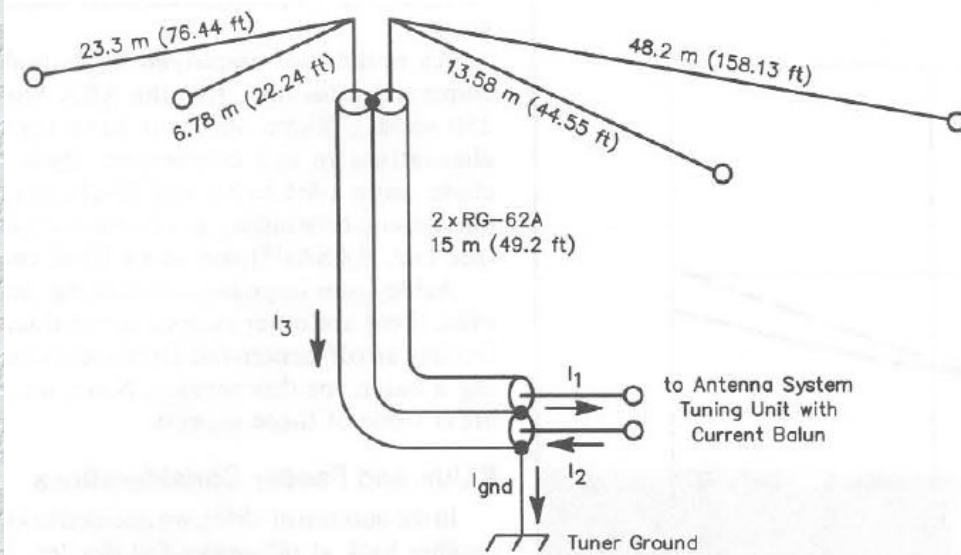
<https://www.qsl.net/va3iul>

(B)

393 - Monoband Fat-Dipole Antenna for 160m to 10m

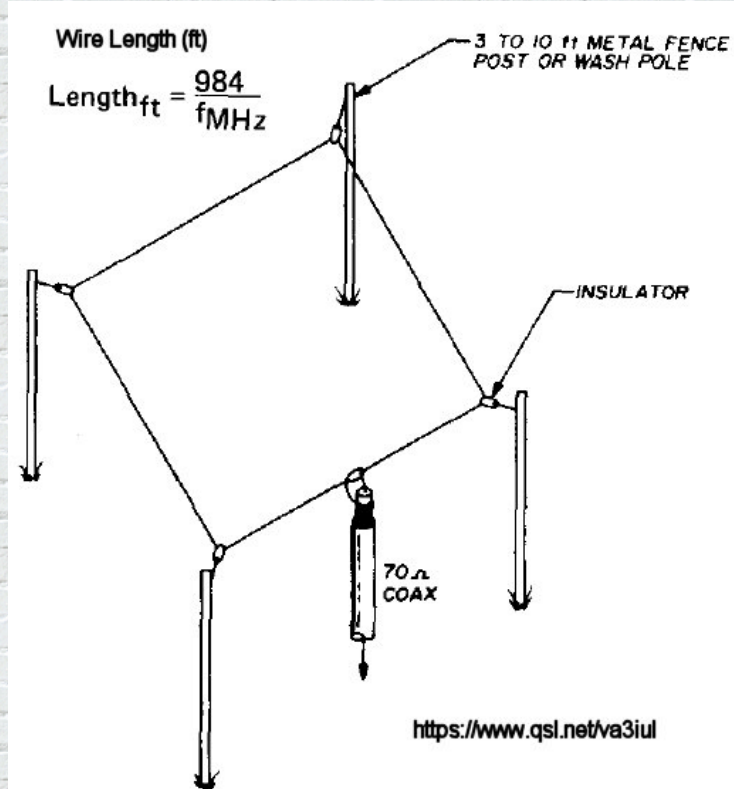


394 - Off-Center Fed Dipole 160m to 10m

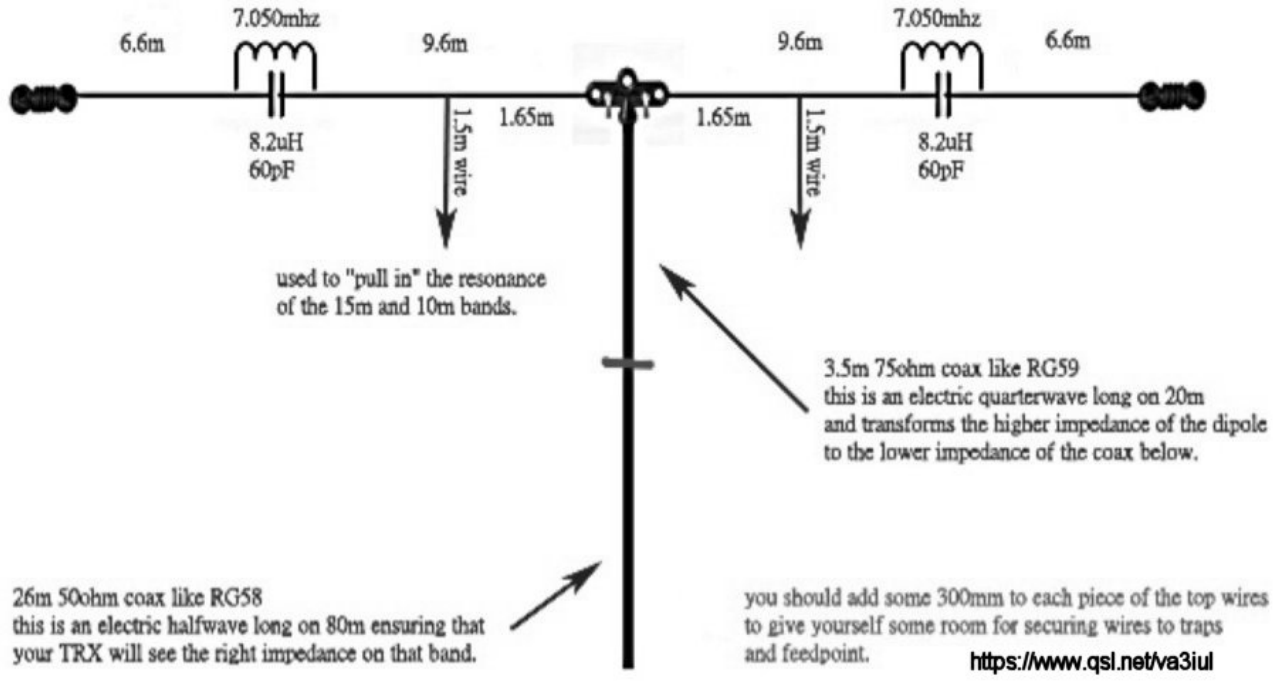


<https://www.qsl.net/va3iul>

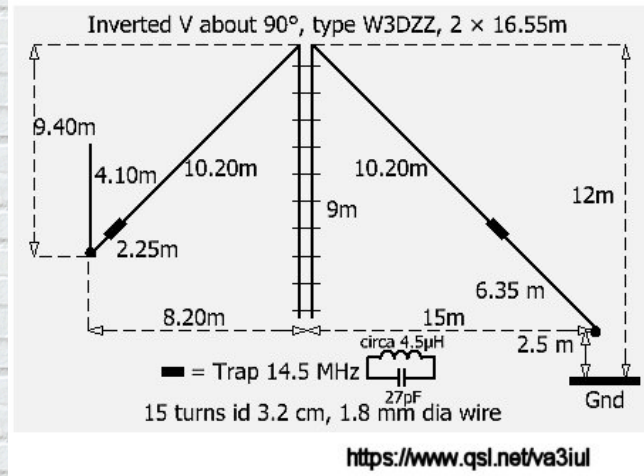
395 - Horizontal Quad Antenna



396 - W3DZZ 5-band Antenna for 80m,40m,20m,15m,10m



397 - W3DZZ 4-band for 160m,80m,40m,20m



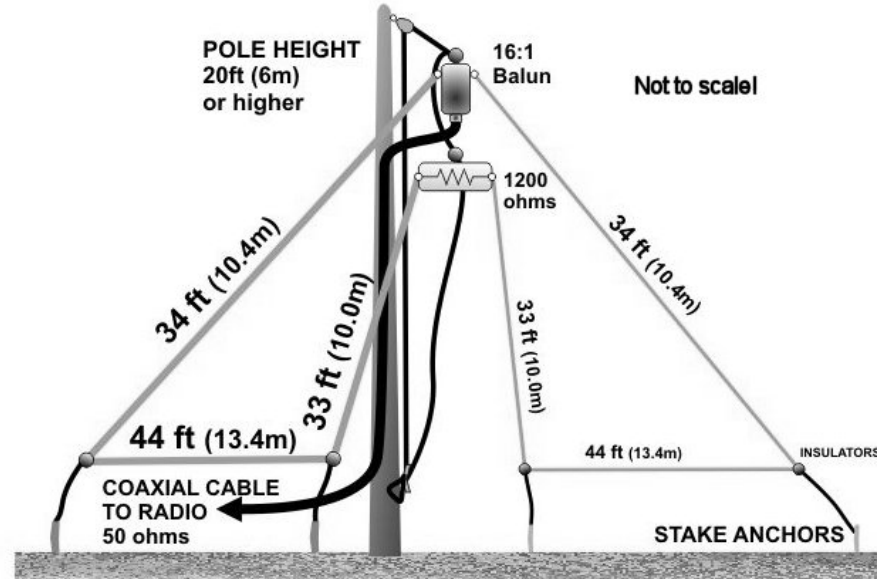
398 - Broadband Butterfly Dipole Antenna for 160m to 6m

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Broadband Butterfly Terminated Dipole Antenna (BBTD)

Inverted V Pyramid Configuration
with a flagpole support
(perspective view from side)

Dimensions Optimized for 7 MHz ~ 54 MHz
with < 2:1 SWR 1.8 MHz ~ 54 MHz - TUNER NOT NEEDED

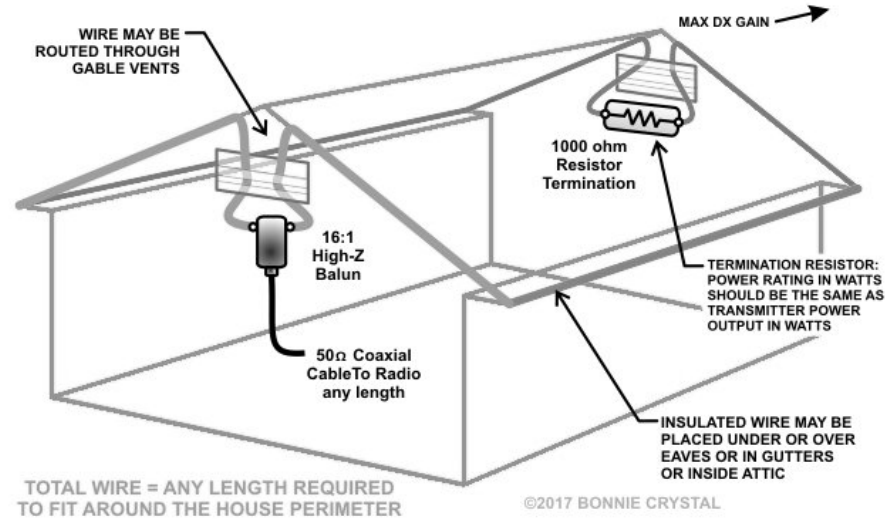


399 - Broadband Butterfly House Roof Antenna for 160m to 6m

<https://www.qsl.net/va3iul>

Broadband Butterfly Terminated Dipole Antenna (BBTD)

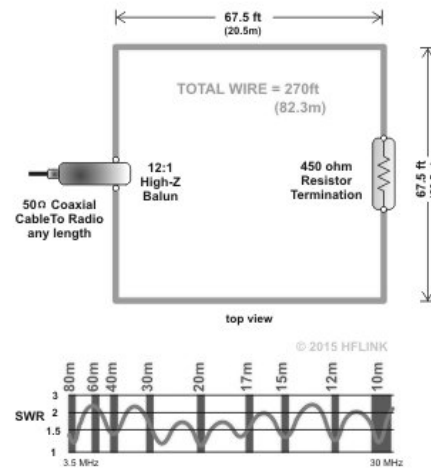
House Roof Version
1.8 MHz to 54 MHz SWR <2:1



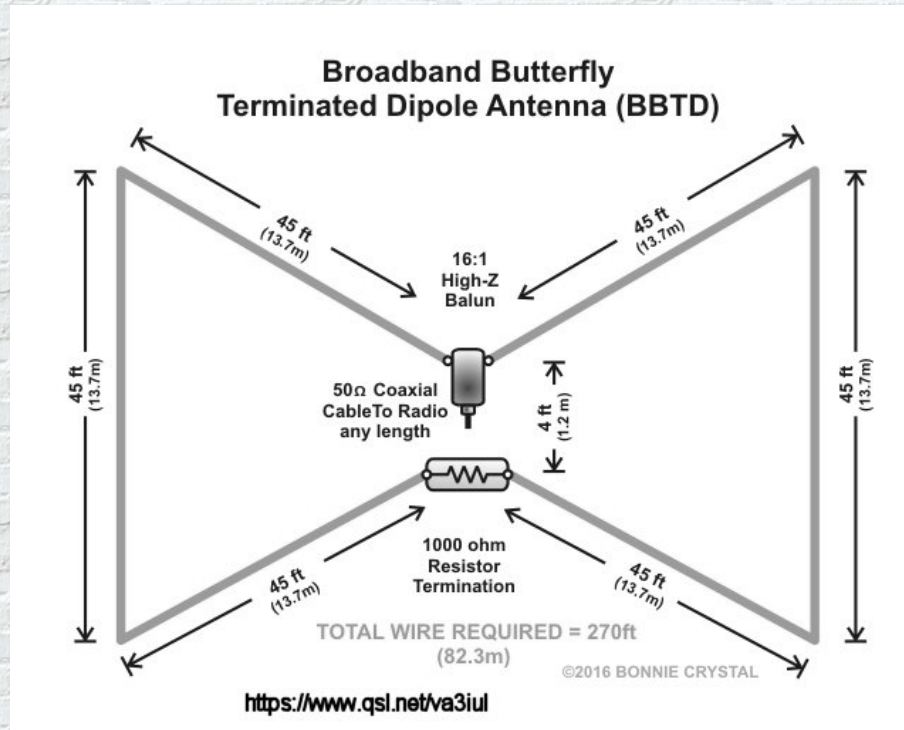
400 - Broadband Square Loop Antenna for 80m to 10m

<https://www.qsl.net/va3iul>

Broadband Terminated Square Loop Antenna (BTSL)



401 - Broadband Terminated Dipole Antenna for 80m to 10m

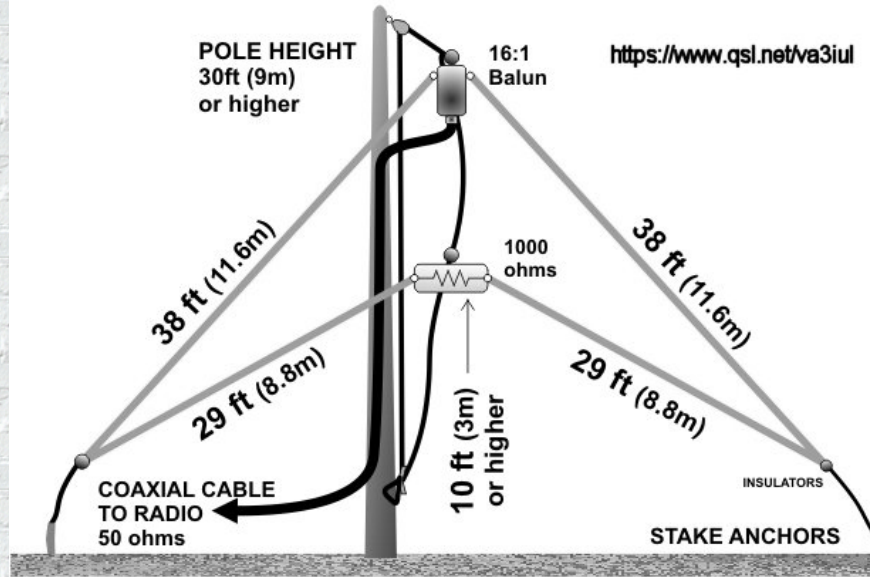


402 - Inverted-V Delta Wing Antenna for 160m to 6m

**Broadband Butterfly
Terminated Dipole Antenna (BBTD)**

**Inverted V Delta Wing
with a flagpole support
(perspective view from side)**

Dimensions Optimized for 7 MHz ~ 30 MHz
with < 2:1 SWR 1.8 MHz ~ 54 MHz - TUNER NOT NEEDED

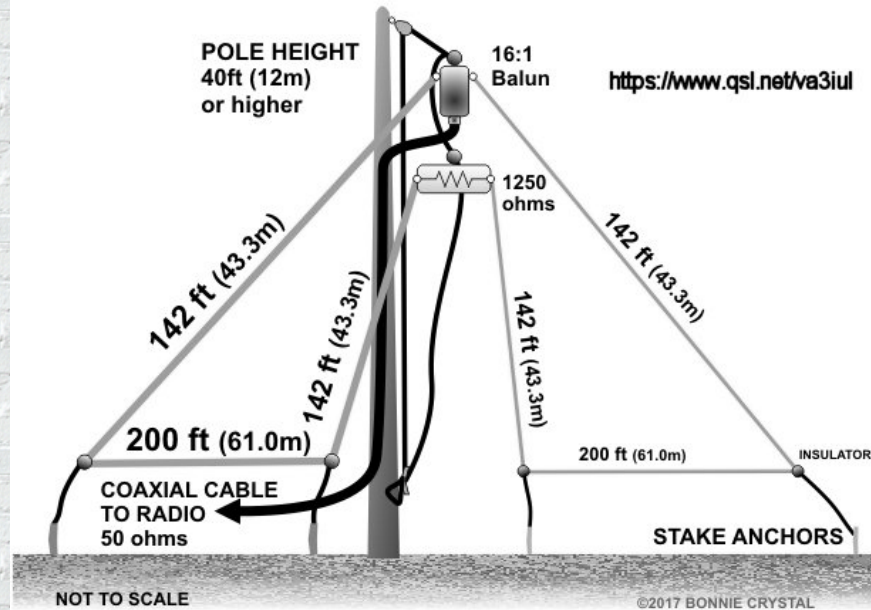


403 - Broadband Butterfly Dipole Antenna for 160m to 10m

**Broadband Butterfly
Terminated Dipole Antenna (BBTD)**

**Inverted V Pyramid Configuration
with a flagpole support
(perspective view from side)**

Dimensions Optimized for 1.8 MHz ~ 30 MHz
with < 2:1 SWR 1.5 MHz ~ 30 MHz - TUNER NOT NEEDED



Antenna Toolkit - J. Carr

Practical Antenna Handbook - J. Carr

More Antenna Classics - C. Hutchinson

Amateur Radio Techniques - P. Hawker

The Radio Handbook - W. Orr (editor), 15th edition

The Radio Antenna Handbook - Engineering Staff of "Radio"

Jones Antenna Handbook - Frank C. Jones

SM0DTK - <http://www.sm0dtk.se/antennas.htm>

ARRL Antenna Handbook 1990-2007

ARRL Handbook 1937-2009

ARRL Antenna Compendium

73 Magazine 1970-2002

Funkamateur Magazine 1990-2018

RSGB Handbook - 2007 - 2010

QST Magazine - 1980 - 2010

Ham Radio Magazine - 1969 - 1990

Radio-Electronics Magazine - 1986 - 1990

Radio Communication - Journal of RSGB - 1981 - 2017

home: <http://www.qsl.net/va3iul>

