

Home Brew Antennas

80 & 30 Meter $\frac{1}{2} \lambda$

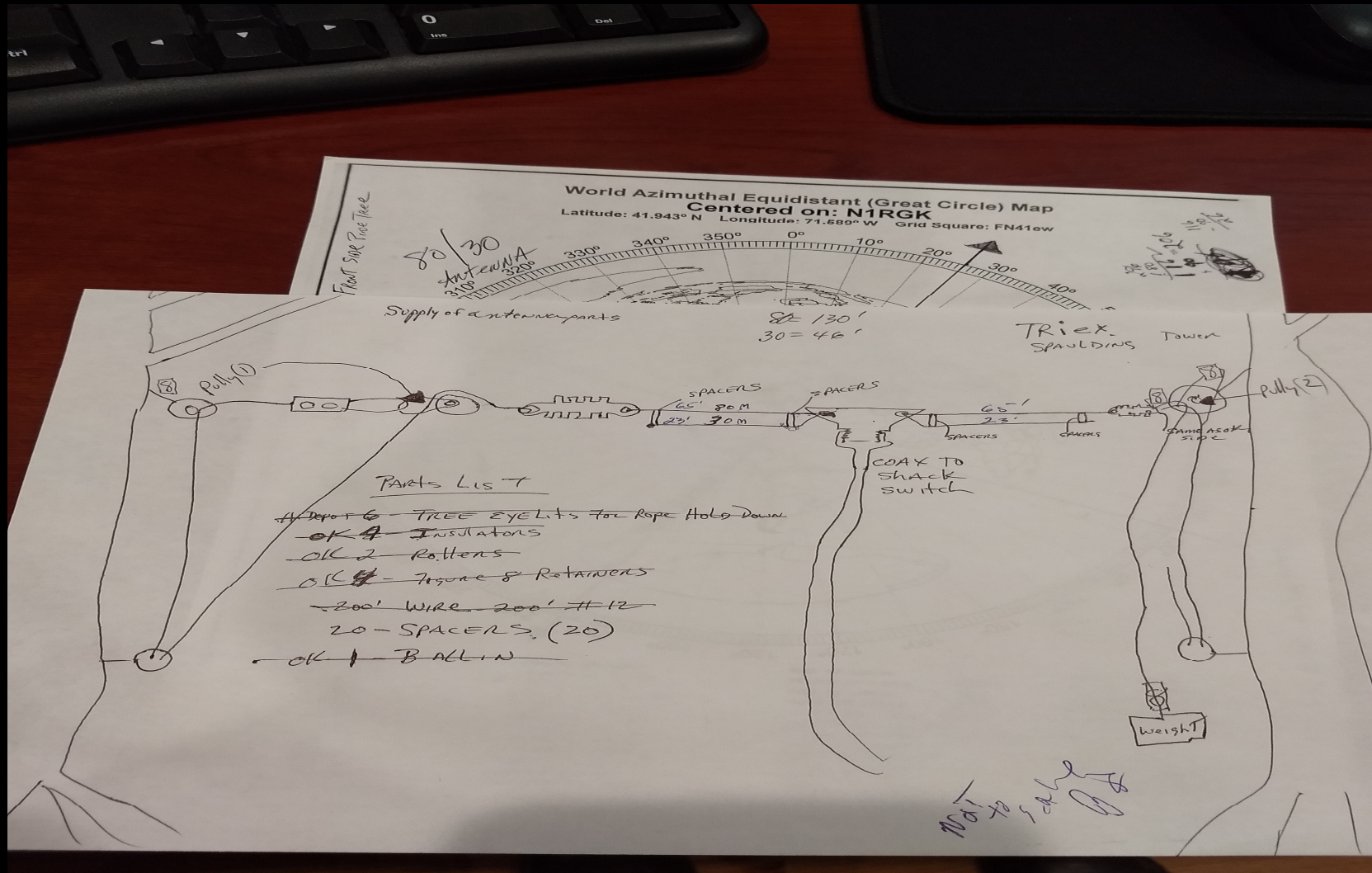
Fan Dipole



Ken, N1RGK

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All Great Projects Start With A Great Plan



Construction of Antenna Parts List

Model
DELTA-C
Antenna Hardware Kit
Made In U.S.A.
ALPHA DELTA COMMUNICATIONS INC. **AA**
Manchester, KY, U.S.A. • (606) 598-2029 • Fax (606) 598-4413

Static Protection
For Solid State
Communications Equipment

THHN 10 Str Cu Bk 500SpC

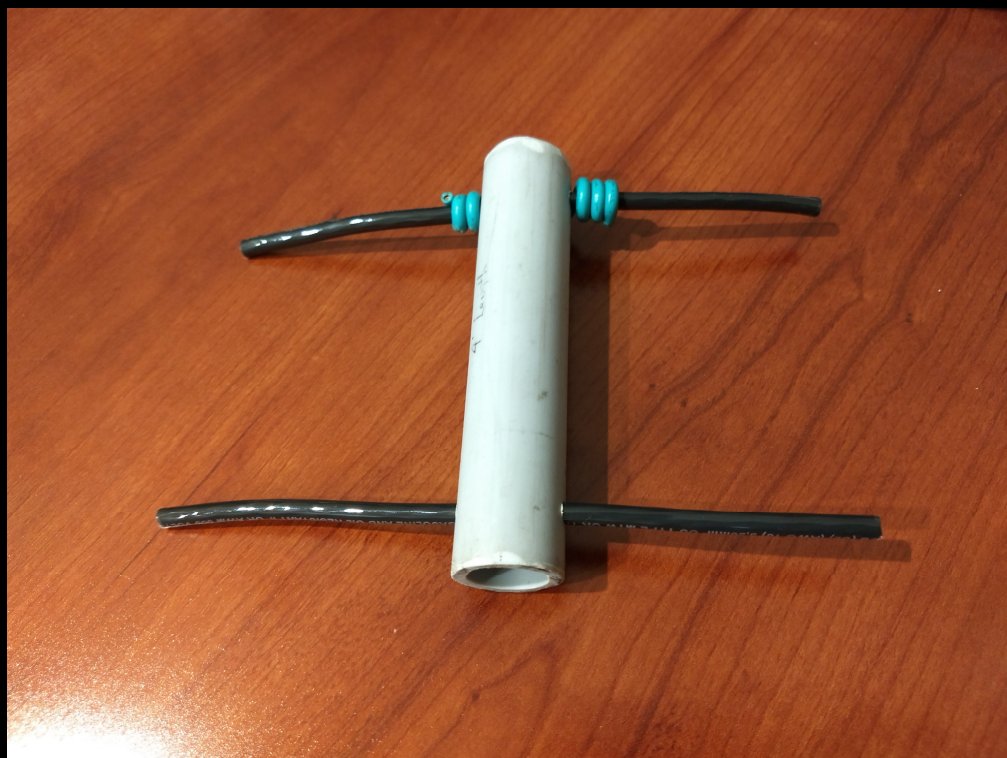
UL MACHINE TOOL WIRE **UL**
LISTED **PLANT:** **LISTED 6/18/19** **ROHS COMPLIANT**
File # E51583 Issue # DU-437,226 **0107** **MADE IN USA**
10 AWG CU MTW and THWN and THHN 90C and AWM 600 VOLTS 105C, .0166
PVC, .0046 NYLON; FOR USE AS INTERNAL WIRING

22973257
500 FT



Construction of Antenna

Parts List



1/2" PVC Tubing

Ask at Lowe's or Home Depot for scrap pieces as they often have them or ones that are bent, dirty or other minor imperfections.

I was able to get this 10' piece for \$1.00 because it wasn't perfectly straight.

Construction of $\frac{1}{2} \lambda$ Antenna Length of Wire

$\frac{1}{2} \lambda$ Antenna Length Formula

- When determining how long to make each leg of a Dipole antenna, dividing the frequency in MHz into 468 will give the overall BALL PARK length.
- Then, divide that number by two. This will give you the length of each leg of the antenna.
- In view of the fact that the actual length needed will depend on a variety of factors including the exact center frequency required, wire thickness, height above ground, nearby objects, and a variety of other factors, it is always best to cut the antenna slightly longer than expected, and then trim it to provide the optimum performance.

Construction of $\frac{1}{2} \lambda$ Antenna Length of Wire

$\frac{1}{2} \lambda$ Antenna Length Formula
This is a starting point only

$$\frac{1}{2} \lambda \text{ Antenna} = \frac{468}{\text{Frequency In MHz}}$$

Frequency is determined by how you are planning to use the antenna!

For 80 Meters

CW and no phone – 3.600mhz

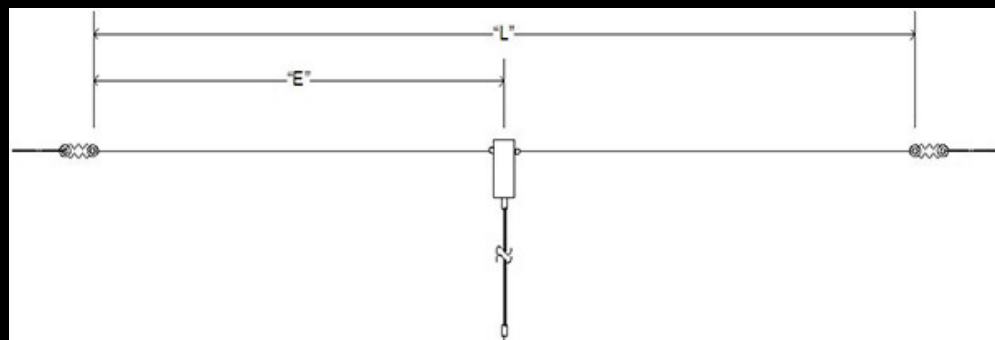
Sideband – 3.700 – 3.750mhz

For FT8 – 3.574mhz

For 30 Meters, given the band is so small 10.100 - 10.150, we use 10.125 which is the center frequency.

Construction of $\frac{1}{2} \lambda$ Antenna

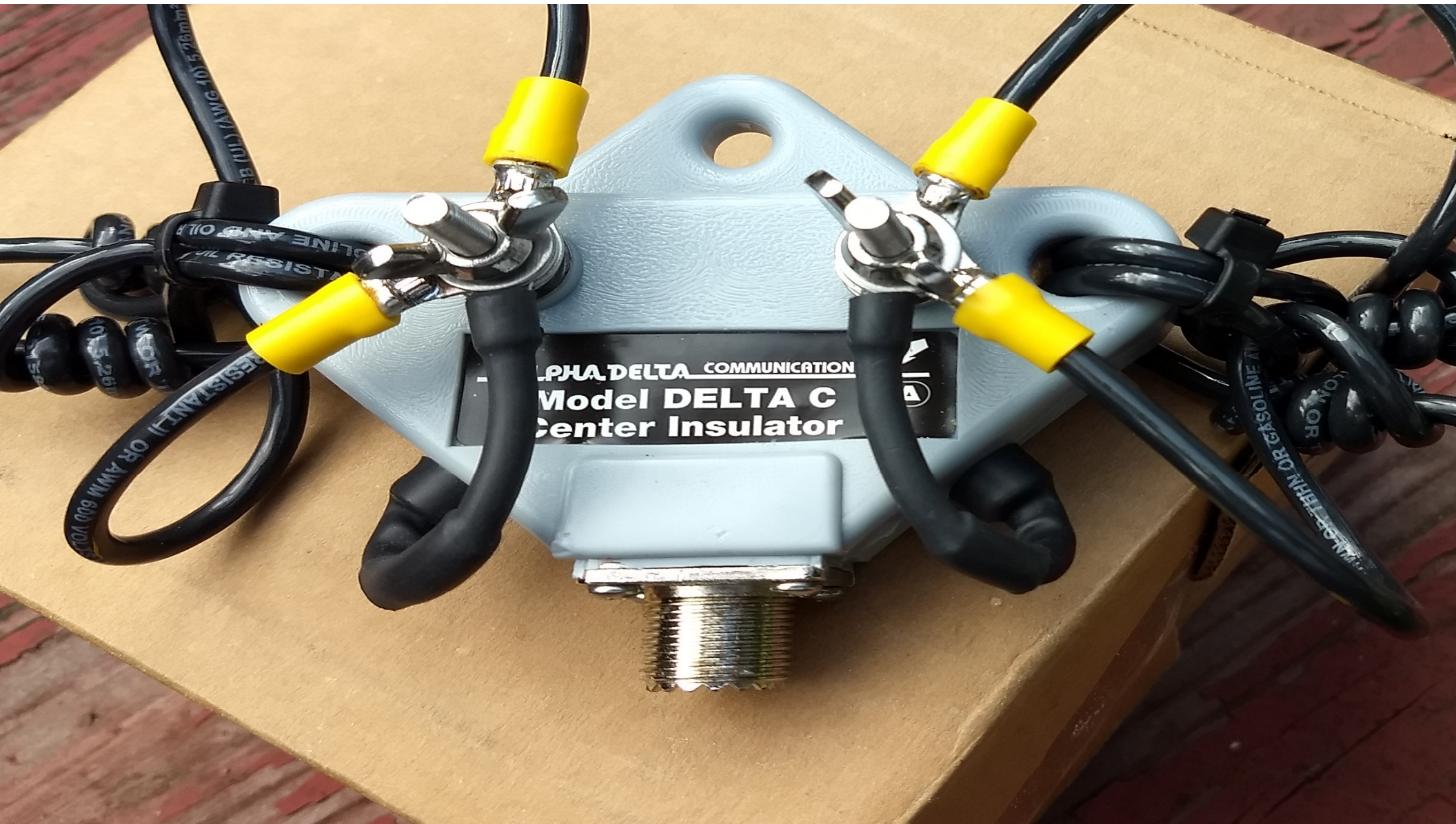
Length of Wire



	MHz	"L" (Feet)	"E" (Feet)			MHz	"L" (Feet)	"E" (Feet)
160 Meters	1.8	260	130		20 Meters	14	33.43	16.71
	1.9	246.32	123.16			14.1	33.19	16.6
	2	234	117			14.2	32.96	16.48
80 Meters	3.5	133.71	66.86		14.22	32.91	16.46	
	3.6	130	65		14.3	32.73	16.36	
	3.7	126.49	63.24		14.313	32.7	16.35	
	3.8	123.16	61.58		17 Meters	18.068	25.9	12.95
	3.9	120	60		18.13	25.81	12.91	
60 Meters	4	117	58.5		21	22.29	11.14	
	5.331	87.8	43.9		21.1	22.18	11.09	
	5.347	87.53	43.77		21.2	22.08	11.04	
	5.367	87.21	43.6		21.3	21.97	10.99	
	5.371	87.13	43.56		15 Meters	24.89	18.8	9.4
40 Meters	5.404	86.61	43.31		24.95	18.76	9.38	
	7	66.86	33.43		10 Meters	28	16.71	8.36
	7.1	65.92	32.96		28.5	16.42	8.21	
	7.15	65.45	32.73		29	16.14	8.07	
	7.2	65	32.5		29.5	15.86	7.93	
30 Meters	7.3	64.11	32.05					
	10.1	46.34	23.17					
	10.15	46.11	23.05					

Antenna Assembly





ALPHA DELTA COMMUNICATION
Model DELTA C
Center Insulator

RESISTANT TO OIL AND GASOLINE
FOR
5.26

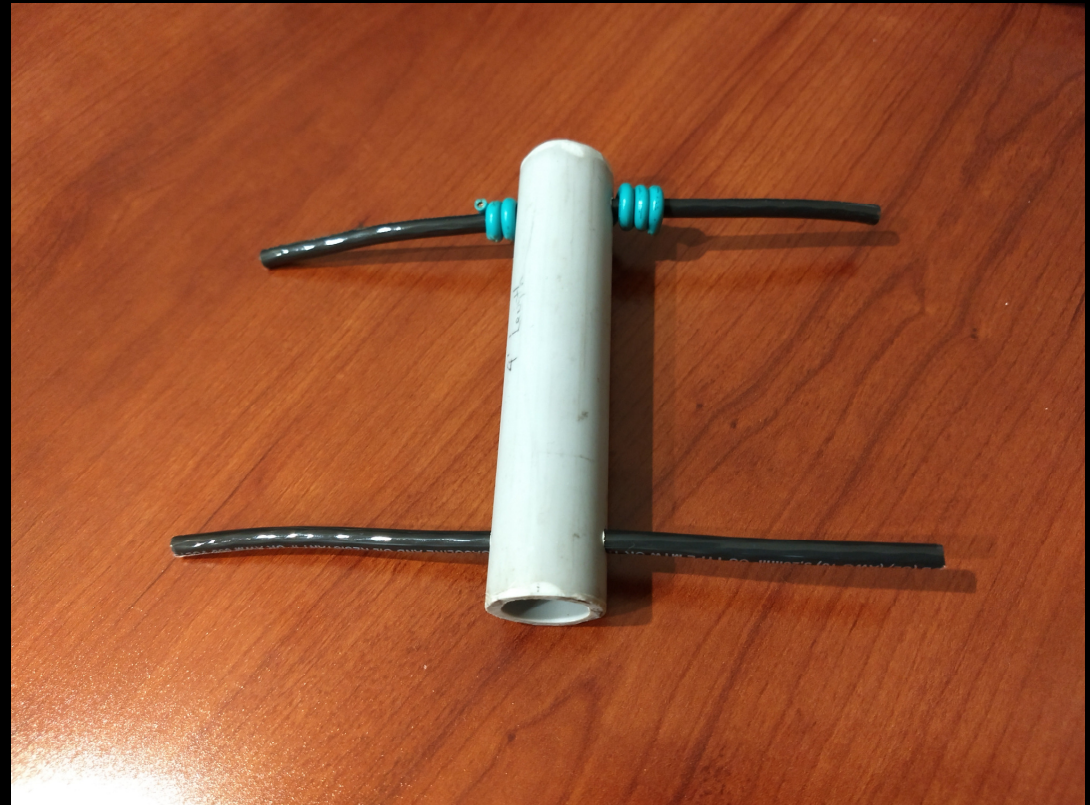
RESISTANT TO OIL AND GASOLINE
FOR
5.26

40 x 5.26mm

Antenna Assembly

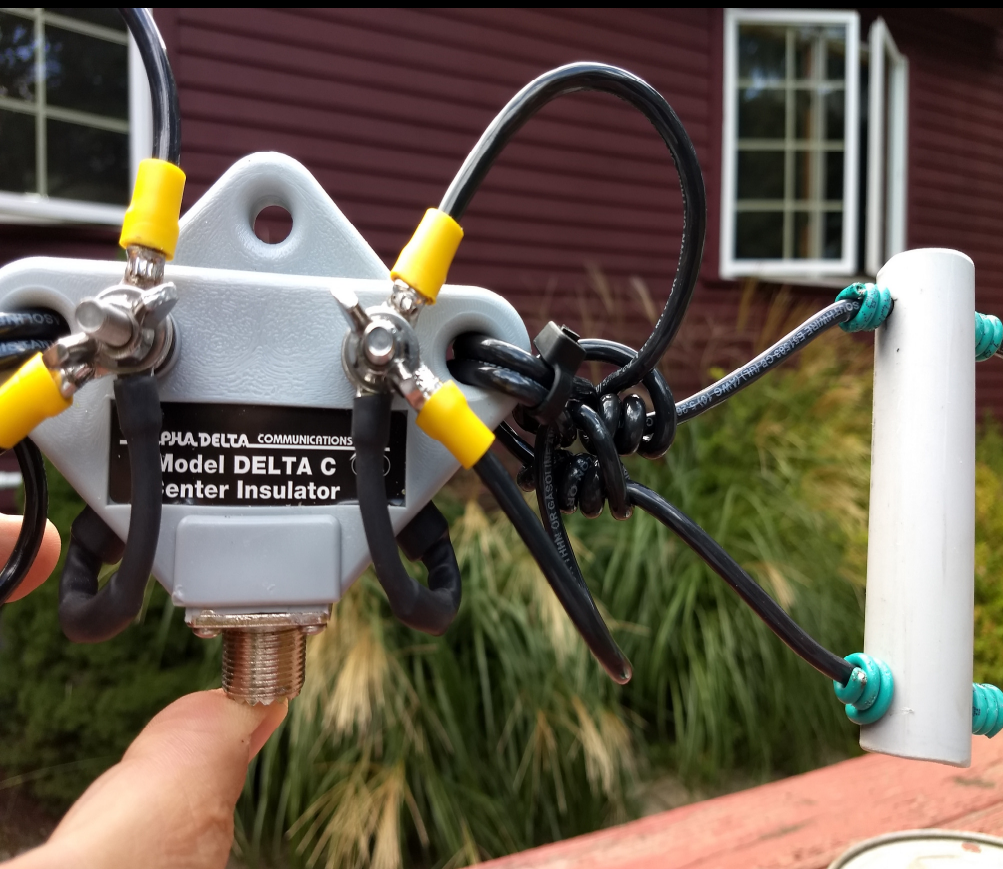
Antenna Spacer Assembly

1. Each spacer is cut to 4" long.
2. Holes are spaced 3" apart.
3. Holes are drilled $\frac{1}{2}$ " from each end yielding a 3" space between each antenna.
4. Each hole drill diameter is dependent on the size of the wire used for the antenna.
5. The anchor wire (light blue) used was solid core copper wire. Use on both ends to secure both antennas to the 4" spacer.



Antenna Assembly

1. Each spacer is placed approximately 1 1/2' along the length of both antennas until the end of the shorter antenna is reached.
2. The first spacer is placed as close to the center splitter as possible.
3. Keep the spacers perpendicular to each antenna.
4. HINT: When assembling the antenna I find it best to string the antenna tightly between two points with sufficient spacers on each side and assemble from the center toward each end. This assures a tight and consistent spacing between each antenna.



Guying Rope and Accessories








Mastrant Antenna Support and Guy Line Ropes – MP05100

Rope, Antenna Guy, Mastrant-P,
Break Strength 1,102 lbs., 5 mm/0.197 in.
Diameter, 100 m / 330 ft. Roll

\$55.99 / Roll



R&L Electronics Text Questions to 513-868-6399 **800-221-7735**

ADC-05 MASTRANT			\$3.04
DUPLEX WIRE ROPE CLIP 5mm (M5)			
	ASC05	MASTRANT ASC05 BULL-DOG GRIP 5mm (M5)	\$2.14 BUY In Stock
	ATH05	MASTRANT ATH05 5mm THIMBLE	\$0.57 BUY In Stock



HARKEN
22mm Single Micro Block, Shackle

\$15.99

 **West Marine**

- Extremely lightweight, free-running blocks
- Blocks are compact and Low-friction
- Polished 316 stainless steel
- Delrin® ball bearings
- Sheave Diameter: 7/8" (22 mm)
- Max. Line Diameter: 1/4" (6 mm)
- Max. Working Load (MWL): 200 lb. (91 kg)
- Breaking Load: 1200 lb. (544 kg)
- Weight: .75 oz (21 g)
- Length: 2 1/4" (57 mm)

Construction of Antenna Counter Weight

Parts List



Assembly of Antenna Counter Weight



Final Assembly of Antenna Counter Weight



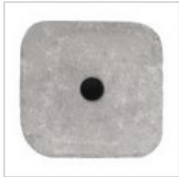
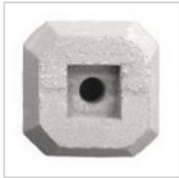
11-1/2 in. x 8 in. x 11-1/2 in. Concrete Block

★★★★★ (38) [Write a Review](#) [Questions & Answers \(73\)](#)

- Designed for installing and anchoring posts
- Simple and easy installation
- No holes to dig or concrete to pour



\$5¹⁰





Which COAX Do I Use

DX Engineering DXE-400 MAX

Low-Loss 50Ω

Bulk Coaxial Cable

500 Foot Reel

\$399.99



Coaxial Cable Type: 400MAX

Coaxial Cable Jacket Outside Diameter: 0.405 in.

Coaxial Cable Jacket Material: PE, Type III

Center Conductor Gauge: 10 AWG Stranded

Center Conductor Material: Bare copper

Center Conductor Construction: 19 strand - 0.0210 in.

Dielectric Material: Gas injected foam polyethylene

Dielectric Outside Diameter: 0.285 in.

Shield 1 Construction: Bonded polyester tape

Shield 1 Material: Aluminum

Shield 1 Percent Coverage: 100

Shield 2 Construction: Braided

Shield 2 Material: Aluminum Tinned copper

Shield 2 Percent Coverage: 95-96

Low-Loss Gas Foam

Loss Per 100 ft. at 30 MHz: 0.8 dB

Velocity Factor Percentage: 84

Coaxial Cable Length: 500 ft.

UV-Resistant: Yes

Direct Bury: Yes

Times Microwave LMR400

\$1.00/foot **\$500.00**

What does LRM Stand For?

According to TMS...



TMS makes the highest quality coaxial cable for communications services including Amateur Radio. The LMR series is a 50 ohm coax designed to replace lower quality coax cables. There are rumors of what LMR stands for. One site says it is from the old days at TMS when they contracted to Lockheed Martin to make coax for military radar and radio equipment, LMR meaning Lockheed Martin Radar coax. Another site says is just means Land and Mobile Radio coax. But for all we know, it could be the initials of the first guy in the warehouse to keep inventory of the stuff. Or it may mean absolutely nothing.



73, N1RGK