

W6NL XM240 Moxon Design
 Newly Modified by W6NL 9/1/2015 for WE9V
 For even better wind survival than W2SC Mod,
 less sag (no element guys),
 uses standard tubing sizes and 6' lengths

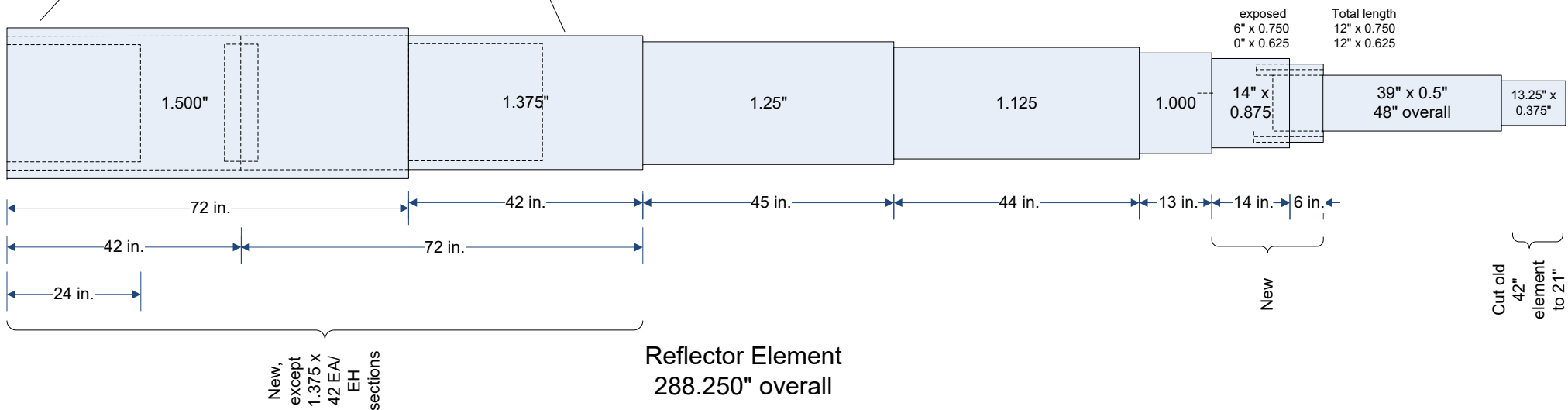
1.5" Tubing
 Triple wall for first 24" (1.250"x24")
 Double wall remainder of length
 Use 72" 1.375" section (with 42"
 exposed), and inner section of 42"
 from EA/EH sections of original
 antenna. Add 1.250"x6" butt joint
 reinforcement.

1.375" Tubing
 New 6' section with 42" exposed, the
 remainder inside the 1.5" section.
 New 1.25" x 24" insert

Designer: W9JA			Element No. 1 --> Rear Reflector		File: XM240M05
Location (In)	Area (SqIn)	Weight (Lb)	Sag (In)	Safe @	98 Mph
3.000	433.792	17.96	17.692		
Section No	Diameter In	Wall In	Exposed Length In	Total	Max Stress Ksi
Tip--> 1	0.375	0.058	13.250	36.000	1.47
2	0.500	0.058	39.000	48.000	13.54
3	0.625	0.116	3.000	9.000	6.03
4	0.750	0.174	3.000	6.000	3.60
5	0.875	0.058	14.000	18.000	7.84
6	1.000	0.058	13.000	16.000	8.73
7	1.125	0.058	44.000	48.000	19.29
8	1.250	0.058	45.000	48.000	32.47
9	1.375	0.058	18.000	18.000	33.79
10 Dblr	1.375	0.116	24.000	24.000	25.67
11	1.500	0.116	48.000	48.000	34.55
12 Dblr	1.500	0.174	24.000	24.000	32.05

Half Length = 288.250 In
 Res Frequency = 10.215 Mhz

Orig Length = 288.250
 Res Frequency = 10.208 Mhz



WE9V/W6NL 100 MPH Mod 9/1/2015					
ASSEMBLY:					
Driven Element	Left	Right	Exposed	Total	
1.500	72" (D1L)	72" (D1R)	72	72	NEW
1.375	42" (D1AL)	42" (D1AR)			Use old 1.375 x 42"
1.250	18" (D1BL)	18" (D1BR)			NEW
1.250	6" (D1CL)	6" (D1CR)			NEW, butt joint reinforcement
1.375	72" (D2L)	72" (D2R)	42	114	NEW
1.250	18" (D2AL)	18" (D2AR)	0		NEW insert
1.250	48" (D3L)	48" (D3R)	45	159	old EB
1.125	48" (D4L)	48" (D4R)	44	203	old EC
1.000	16" (D5L)	16" (D5R)	2	205	old ED half
0.875	18" (D6L)	18" (D6R)	2	207	NEW
0.750	12" (D7L)	12" (D7R)	6	213	NEW, Tee at 208.5", plate butts to 0.875"
0.625	12" (D8L)	12" (D8R)	0	213	NEW
0.500	48" (D9L)	48" (D9R)	39	252	old EF
0.375	42" (D10L)	42" (D10R)	32.5	284.5	old EJ
Reflector	Left	Right	Exposed	Total	
1.500	72" (R1L)	72" (R1R)	72	72	NEW
1.375	42" (R1AL)	42" (R1AR)			Use old 1.375 x 42"
1.250	24" (R1BL)	24" (R1BR)			NEW
1.250	6" (R1CL)	6" (R1CR)			NEW, butt joint reinforcement
1.375	72" (R2L)	72" (R2R)	42	114	NEW
1.250	27" (R2AL)	27" (R2AR)	0		NEW insert
1.250	48" (R3L)	48" (R3R)	45	159	old EB
1.125	48" (R4L)	48" (R4R)	44	203	old EC
1.000	16" (R5L)	16" (R5R)	13	216	old ED half
0.875	18" (R6L)	18" (R6R)	14	230	NEW
0.750	12" (R7L)	12" (R7R)	6	236	NEW, Tee at 231.5", plate butts to 0.875"
0.625	12" (R8L)	12" (R8R)	0	236	NEW
0.500	48" (R9L)	48" (R9R)	39	275	old EF
0.375	21" (R10L)	21" (R10R)	13.25	288.3	old EJ half
DTL			Exposed	Total	
0.750	48" DTL1 DTR1	*accurate	24	24	
0.625	12" DTLI DTRI				
0.625	24" DTL2A DTL2B DTR2A DTR2B		21	45	
0.500	48" DTL3A DTL3B DTR3A DTR3B		45	90	
0.375	33" DTL4A DTL4B DTR4A DTR4B		28.75	118.8	
RTL			Exposed	Total	
0.750	48" RTL1 RTR1 *accurate		24	24	
0.625	12" RTLI RTRI				
0.625	24" RTL2A RTL2B RTR2A RTR2B		21	45	
0.500	48" RTL3A RTL3B RTR3A RTR3B		45	90	
0.375	39" RTL4A RTL4B RTR4A RTR4B		34.75	124.8	
CUTTING SCHEDULE FOR 6 FOOT PIECES:					
1.500					

#1	1X72 (D1L)	No cuts			
#2	1X72 (D1R)	No cuts			
#3	1X72 (R1L)	No cuts			
#4	1X72 (R1R)	No cuts			
1.375					
#1	1X72 (D2L)	No cuts			
#2	1x72 (D2R)	No cuts			
#3	1x72 (R2L)	No cuts			
#4	1X72 (R2R)	No cuts			
	Use existing 42" EA/EH sections for (D1AL)(D1AR)(R1AL)(R1AR)				
1.250					
#1	2X24 (R1BL)(R1BR) 4X6 (R1CL)(R1CR)(D1CL)(D1CR)				
#2	2X27 (R2AL)(R2AR) 1X18 (D2AL)				
#3	3X18 (D2AR)(D1BL)(D1BR) [18" remain]				
	use existing EB for D3L,D3R,R3L,R3R				
1.125					
	Use existing antenna EC sections for D4L,D4R,R4L,R4R				
1.000					
	Use existing antenna ED sections (cut 32" sections in half, for 4x16" sections)				
0.875					
#1	4X18 (D6L)(D6R)(R6L)(R6R)				
0.750					
#1	1x48 (DTL1) 2X12 (D7L)(D7R)				
#2	1x48 (DTR1) 2X12 (R7L)(R7R)				
#3	1x48 (RTL1) [24" remain]				
#4	1x48 (RTR1) [24" remain]				
#5	extra, not needed				
0.625					
#1	2X24 (DTL2A)(DTL2B) 2X12 (DTLI)(DTRI)				
#2	2X24 (DTR2A)(DTR2B) 2X12 (RTL1)(RTRI)				
#3	3X24 (RTL2A)(RTL2B)(RTR2A)				
#4	1X24 (RTL2B) 4X12 (D8L)(D8R)(R8L)(R8R)				
0.500					
#1	1X48 (DTL3A)				
#2	1X48 (DTL3B)				
#3	1X48 (DTR3A)				
#4	1X48 (DTR3B)				
#5	1X48 (RTL3A)				
#6	1X48 (RTL3B)				
#7	1X48 (RTR3A)				
#8	1X48 (RTR3B)				
0.375					
#1	1X33 (DTL4A) 1X39 (RTL4A)				
#2	1X33 (DTL4B) 1X39 (RTL4B)				
#3	1X33 (DTR4A) 1X39 (RTR4A)				
#4	1X33 (DTR4B) 1X39 (RTR4B)				

Part	Qty Needed	Part Number/Source	Order Qty	Price	Ext. Price	Notes
Saddle Clamps for 1.5"	8	DX Engineering DXE-RSB-I11500	8	\$6.45	\$51.60	bolts 1/4-20 x 3" and plates must be purchased separately
Reinforcement for Saddle Clamp	8	DX Engineering DXE-RSB-DP-5	0	\$6.45	\$0.00	0.119" thick x 2.76" long x 1.182" wide, stainless
Homebrew reinforcement for saddle clamp		mcmaster 8992K133 24"	1	\$7.48	\$7.48	Can make 8x 3" pices from 24", \$4.30 for 12"
1/4-20 x 3.25" SS Bolts	16	McMaster 92198A555 partial thread x25	25	\$8.36	\$8.36	For element clamps (boltdpot \$0.38/ea)
1/4-20 SS Nuts	16	McMaster 91845A029 x100	100	\$4.52	\$4.52	Or use Nylock? (boltdpot \$4.97)
1/4 SS Lock Washers	16	McMaster 92146A029 x100	100	\$4.03	\$4.03	Or use Nylock?
1/4-20 SS Nylock Nuts		91831A029 \$4.30/50				instead of nuts and wasters, same price (boltdpot \$6.79/100, \$0.09ea)(boltdpot flat washers \$2.30/100)
		SEE BOLTDEPOT.COM FIRST				
8-32 SS Nuts, Nylock	112	mcmaster 91831A009	200	\$5.92	\$11.84	boltdpot \$4.70/100, or \$0.07ea
8-32 SS Nuts, plain			100	\$3.81		boltdpot \$2.79/100 or \$0.05ea
8-32 SS Machine Screws		Use 0.25" longer than section diameter				
1-3/4" (for W2SC mod) for 1.5	8	mcmaster 91772A204 (1-3/4)	50	\$7.68	\$7.68	boltdpot \$0.14/ea for 1-3/4", need 16 = \$2.24
1-5/8" for 1.375	8	use 1-3/4"				
1-1/2" for 1.25	8	mcmaster 91772A203	50	\$7.36	\$7.36	boltdpot \$0.13/ea or \$7.97/100, need 32 = \$4.16 (buy 100?)
1-3/8"	8	Use 1-1/2"				
1-1/4"	8	Use 1-1/2"				
1-1/8"	8	Use 1-1/2"				
1"	24	mcmaster 91772A199	100	\$10.45	\$10.45	boltdpot \$5.72/100, need 72
7/8"	24	Use 1"				
3/4"	24	Use 1"				
U-bolt, SS, 1/4" x 3/4" x 1-1/4"	16	mcmaster 8896T101	16	\$2.35	\$37.60	(MSC # 76876028 \$2.45ea)
1/4" x 3" x 3" Al Plate	4	mcmaster 8975K87 3" x 12"	1	\$7.46	\$7.46	