Universal VFO - Frequency Dependent Components

Reference	Quantity	80	40		30		20	
C16, 38	2	220	100 pf		68 pf		56 pf	
C22, 23	2	470	220 pf		150 pf		100 pf	
C18, 40	2	560	270 pf		180 pf		150 pf	
C2	1	330	330 pf		390 pf		390 pf	
C17, 39	2	820	390 pf		270 pf		220 pf	
C24, 25, 26, 27	4	820	470 pf		330 pf		220 pf	
C12, 13	2	1800	1000 pf		680 pf		560 pf	
C1 (variable)	1		10-190 pf		10-190 pf		10-190 pf	
Toroids	**type**		**value/turns**		**value/turns**		**value/turns**	
L1	T50-6	T68-2 42T	37 T tap at 9 T from gnd		22T tap at 5 T from gnd		18 T tap at 5 T from gnd	
L2	T37-6	T50-2 35T	2.6u	28T	1.6u	20T	1.1u	16T
L3, 7	T37-6	T50-2 40T	4.7u	36T	3.3u	30T	2.4u	26T
L4, 8	T37-6	T37-2 23T	1.4u	19T	.98u	16T	.70u	13T
L5, 6	T37-6	T37-2 21T	1.1u	16T	.78u	13T	.56u	11T
T4	T37-6	T37-2 22T	1.1u	17T	.78u	14T	.56	12T

Turns are the number of turns of #28 or smaller wire on T- 30 or T-37 powered iron toroids. Space the turns evenly around the core. If an L meter is available squeeze or spread the turns to achieve the inductance shown in the table. For other ranges, use A_L = 39 and calculate the number of turns using:

$$N = 100[\text{desired uH}/A_L]^{1/2}$$

Note that the approximate A_L value is different from the one supplied on the Amidon data sheets and includes corrections appropriate for the number of turns of #28 to #36 wire for this frequency range. The cross section of T30 and T37 toroids is very similar, so the same number of turns is used.

L1 the main tuning inductor is wound on a T50-6 core using #28 wire. The highest frequency is determined by the inductance of L1, the distributed capacitance between the turns, and the band set capacitor C2. Different variable capacitors may be used. The tuning range is determined by the total capacitance change and where the tuning capacitor is connected to L1. Connecting a variable capacitor across all of L1 results in a wide tuning range. Connecting the same variable capacitor at the source tap (to ground) results in a narrower tuning range. Other ranges may be selected by adding a tap to L1, since L1 acts as a nearly ideal autotransformer. The final frequency range of the VFO is set by squeezing or spreading the turns. After the final range is set, apply a liberal coat of clear nail polish to L1 to fix the turns in place.