

<b>7/19/05 - DD - BL5 SkewQuad Revised on 2/14/06</b>	<b>BL5 skew coil with indirect</b>
Coil internal width (m)	0.15748
Coil spacing (vertical) (m)	0.06452
Coil Magnetic Length (m)	2.0261
Coil Width (m)	0.1800
<b>CONDUCTOR</b>	
Conductor width (mm)	2.00
Conductor height (mm)	4.00
Fillet (mm)	0.00
Cooling Hole Diam (mm)	0.00
Cond. Cross-Sect. Area (mm <sup>2</sup> )	8.00
<b>COIL</b>	
Turns per Pole	72
Pancakes per Pole	1.0
Conductor length/pole (m)	336.9
Total Coils Weight (kg)	47.4
<b>MAGNET</b>	
Integrated Skew gradient (G)	1300
Amp Turns per Pole	1024.6
Current (A)	14.23
Current density (A/mm <sup>2</sup> )	1.78
Mag. Res. @ 40 C (mOhm)	1566.2
Power/Magnet (kW)	0.317
Voltage drop/Magnet (V)	22.3

**Cooling (at 30 A)**

Q (W) 1 coil	704.786
V (m3) 1 coil	0.00270
Q/V (W/m <sup>3</sup> )	261493
Tl <sub>cw</sub> ( C)	40
Coil Half Width (m)	0.009
k (W/m/K)	2.700
Tmax (C)	43.620

Water circuits	1
Water pressure drop (psi)	150.0
Water flow rate/magnet (gpm)	0.5
Water temperature rise (C)	2.2
Water speed (m/s)	4.7
Reynold's number	14757

**WATER FLOW calc. at 21 C**

D (m)	0.003048
L (m)	9.104400
Iteration 0	
V1 (m/s)	2.000000
Re1	6220.408
f1	0.020000
Iteration 1	
V	5.885070
Re	18303.769
f	0.030770
Iteration 2	
V	4.744638
Re	14756.792
f	0.030770
Iteration 3	
V	4.744638
Re	14756.792

<b>COIL</b>	along pole	across pole
	<u>mm</u>	<u>mm</u>
Conductors	9	8
Max Cond. Size	4.140	2.068
Keystone 4%		
DMD (7 layers)		
Turn Insul.	0.052	0.047
Ground insul.		
Epoxy		
Coil size	38.199	17.292
	<u>in</u>	<u>in</u>
Max Cond. Size	0.1630	0.0814
Keystone 4%	0.0000	0.0000
DMD (7 layers)	0.0000	0.0000
Turn Insul.	0.0021	0.0019
Ground insul.	0.0000	0.0000
Epoxy	0.0000	0.0000
Coil size	1.5039	0.6808

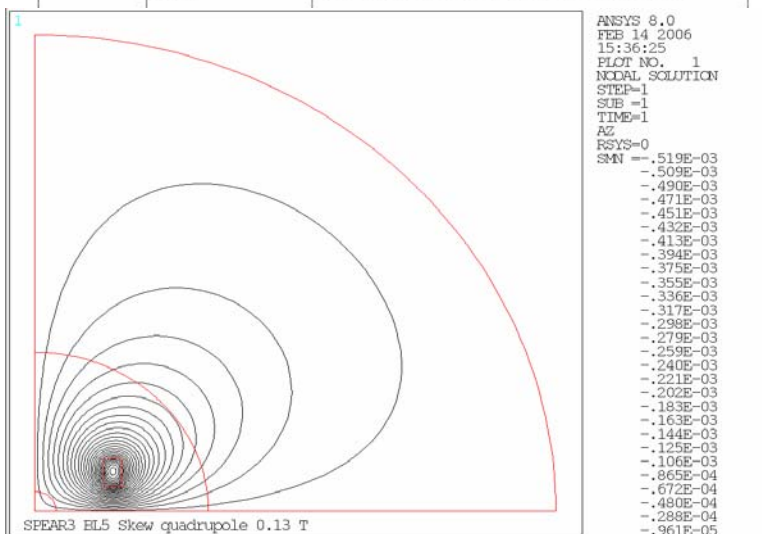
Essex Rectangular cable  
Insulation GP/MR-200  
nominal size bare: 0.163"x0.0814"  
insulated max size: 0.167"x0.0851"

Conductor in Stock at Essex Express:  
1-704-598-0222

4.77\$/lb x 250 lb (minimum order).

Miscellanea:  
Terminal Block: KULKA #603-5, 65 A, 600 V  
MCORE 30 power supply: 30 A

66F7208 31807 TYCO ELECTRONICS / AMP Ring Tongue Solderless Terminal Wire Size (AWG):8; Stud Size:#10; Insulator Color:Red; Leaded Process Compatible:Yes; RoHS Compliant:Yes; Stud/Tab Size:10



f	0.030770
Iteration 4	
V	4.744638
Re	14756.792
f	0.030770
Zero test (must be zero)	0.000000