

APM ELEMENT DESIGN SHEET														
MODEL NUMBER	E23S												REVIS	
VOLTAGE	240	1		PH										
WATTS PER CIRCUIT (SECTION)	4,730	HOT												
ELEMENTS IN SERIES	2			TOTAL WATTS					3,840.00					
TOTAL NUMBER OF ELEMENTS	2			9,460.00									7/32	
ELEMENT OD (MANDRIL)	0.460												21/64" =	
STRETCHED LENGTH OF COIL	70												17/64" =	
NUMBER OF SECTIONS	2												1/4" =	
													15/64"	
LENGTH OF ENDS (INCHES)	12.000												9/32" =	
													5/16" =	
				TOTAL AMPS									11/32" =	
AMPS PER SECTION (1 PH ONLY)	19.708	HOT		39.42									23/64" =	
AMPS PER SECTION (1 PH ONLY)	20.477	COLD		40.95									3/8" =	
WATTS PER SECTION	4,914.470	COLD												
WATTS PER ELEMENT (HOT)	2,365	HOT												
OHMS PER ELEMENT (HOT)	6.089	HOT												
WATTS PER ELEMENT (COLD)	2,457	COLD		FACTOR	1.039								1.039	
OHMS PER ELEMENT (COLD)	5.86	COLD												
OHMS PER CIRCUIT	11.720													
MILLIMETERS			2.50	2.30	2.20	2.00	1.70	1.50	1.20	1.00				
WATT DENSITY (COLD) watts/sq in)			10.17	13.06	14.92	19.86	32.34	47.08	91.96	158.89				
WATT DENSITY (HOT) (watts/sq in)			9.79	12.57	14.36	19.11	31.13	45.31	88.50	152.93				
WATT DENSITY (COLD) watts/sq icm)			1.58	2.02	2.31	3.08	5.01	7.30	14.25	24.63				
WATT DENSITY (HOT) (watts/sq icm)			1.52	1.95	2.23	2.96	4.83	7.02	13.72	23.71				
STRETCH RATIO			0.91	1.25	1.46	2.05	3.61	5.50	11.49	20.71				
ELEMENT OD			0.46	0.46	0.46	0.46	0.46	0.46	0.46	0.46				
RATIO OF COIL DIAM TO WIRE			2.67	3.08	3.31	3.84	4.87	5.79	7.74	9.68				
MANDRIL			0.263	0.279	0.287	0.303	0.326	0.342	0.366	0.381				
POUNDS PER ELEMENTS			1.57	1.13	0.95	0.65	0.35	0.21	0.09	0.05				
FEET OF ELEMENT WIRE			65.11	55.11	50.42	41.67	30.10	23.44	15.00	10.42				
SQ INCHES OF SURFACE AREA			241.65	188.16	164.69	123.73	75.97	52.19	26.72	15.46				
SQ CM OF SURFACE AREA			1,558.88	1,213.84	1,062.41	798.16	490.10	336.71	172.38	99.76				
NUMBER OF COILS			777.29	620.73	552.39	432.73	289.97	215.37	128.92	85.84				
CLOSED LENGTH OF COIL			76.50	56.21	47.84	34.07	19.41	12.72	6.09	3.38				
BASIC WIRE INFORMATION														
DIAM (INCHES)			0.0984	0.0906	0.0866	0.0787	0.0669	0.0591	0.0472	0.0394				
OHMS/METER			0.2953	0.3489	0.3813	0.4614	0.6387	0.8203	1.2818	1.8457				
OHMS/FOOT			0.0900	0.1063	0.1162	0.1406	0.1947	0.2500	0.3907	0.5626				
KG/1000M			34.7836	29.4408	26.9364	22.2615	16.0839	12.5221	8.0141	5.5654				
LBS/1000m			76.6847	64.9058	59.3846	49.0782	35.4589	27.6065	17.6681	12.2696				
LBS/FOOT			0.0234	0.0198	0.0181	0.0150	0.0108	0.0084	0.0054	0.0037				
FEET/LB			42.7835	50.5477	55.2473	66.8492	92.5251	118.8430	185.6932	267.3957				
CM2/M			78.54	72.26	69.12	62.83	53.41	47.12	37.70	31.42				
SQ IN/M			12.17	11.20	10.71	9.74	8.28	7.30	5.84	4.87				
SQ IN/FOOT			3.71	3.41	3.27	2.97	2.52	2.23	1.78	1.48				
FOR COMPARISON TO REGULAR KANTHAL A1														
GA			11 #875	12 #875	13 #875	14 #875	14.5 #875	15 #875	15.5 #875	16 #875	16.5 #875	17 #875	18 #875	19 #875
WATT DENSITY (COLD)			12.91	18.31	26.12	37.17	43.85	52.53	62.11	73.35	88.22	106.80	152.14	208.76
WATT DENSITY (HOT)			12.42	17.63	25.14	35.77	42.20	50.56	59.78	70.60	84.91	102.80	146.43	200.92
STRETCH RATIO			1.23	1.86	2.82	4.22	5.08	6.21	7.47	8.98	10.97	13.51	19.75	27.66
ELEMENT OD			0.46	0.46	0.46	0.46	0.46	0.46	0.46	0.46	0.46	0.46	0.46	0.46
RATIO OF COIL DIAM TO WIRE			3.05	3.68	4.39	5.19	5.60	6.07	6.53	7.02	7.58	8.22	9.50	10.78
MANDRIL			0.278	0.298	0.316	0.332	0.339	0.346	0.352	0.358	0.364	0.370	0.380	0.388
POUNDS PER ELEMENTS			1.16	0.74	0.46	0.29	0.23	0.19	0.15	0.12	0.10	0.08	0.05	0.03
FEET OF ELEMENT WIRE			55.49	43.96	34.68	27.41	24.58	21.78	19.49	17.42	15.41	13.57	10.72	8.68
SQ INCHES OF SURFACE AREA			190.35	134.17	94.08	66.11	56.04	46.78	39.56	33.50	27.85	23.01	16.15	11.77
NUMBER OF COILS			627.13	463.47	344.74	259.37	227.80	197.73	173.84	152.87	132.96	115.18	88.60	70.29
CLOSED LENGTH OF COIL			57.07	37.54	24.82	16.60	13.78	11.27	9.37	7.80	6.38	5.18	3.54	2.53