

April 24, 1992

Memo to: D. Smith
 From: W. Koska
 Subject: Pole Shim for DCA322

A review of the coil size data for the coils used in magnets DCA320 and DCA321, along with the prestress data from the collaring of DCA321, indicates that no kapton shim should be added to the standard ground wrap insulation for DCA322. The following tables summarize the inner and outer coil size data for the coils used in DCA320 through DCA322.

Magnet	Coil	Azim. Size (mils)	Std (mils)	Meas. Machine	Cor. Factor	Cor. Size
320	1021	7.3	1.3	Auto		
320	1022	4.1	1.4	Auto		
321	1023	4.8	1.4	Auto		
321	1024	7.3	1.2	Auto		
322	1025	5.2	0.9	Auto		
322	1026	4.8	1.0	Auto		

Magnet	Coil	Azim. Size (mils)	Std (mils)	Meas. Machine	Cor. Factor (mils)	Cor. Size (mils)
320	2022	-7.8	1.1	Semi	-2.8	-10.6
320	2023	-8.6	0.7	Semi	-2.8	-11.4
321	2024	-12.5	0.7	Auto		-12.5
321	2025	-11.9	0.8	Semi	-2.8	-14.7
322	2026	-8.2	0.9	Auto		-8.2
322	2027	-5.7	0.9	Auto		-5.7

The inner coil sizes are only marginally smaller than the sizes of the coils used in DCA320 and DCA321 and since the final prestress of the inner coils in DCA321 was at the upper end of the desired window (see attached chart), no additional shim is required for the

inner coils. The average size of the two outer coils to be used in DCA322 is about -7 mils, to be compared with -11.0 and -13.6 mils for DCA320 and DCA321, respectively. Since DCA321 was built with five mils of shim on the outer coils, its corrected coil size should have been slightly smaller than the uncorrected coil size of the coils to be used in DCA322. Since the outer coil prestress of DCA321 was adequate, additional shim on the coils of DCA322 should not be necessary.

Wayne Koska

DCA320 COIL SIZE SUMMARY

				2ND SIZING		3RD SIZING	
15M-50-1021	AUTO-01	15M-50-1022	AUTO-01	15M-50-2022	SEMI-01	15M-50-2023	SEMI-01
Quad I/III	Quad II/IV	Quad I/III	Quad II/IV	Quad I/III	Quad II/IV	Quad I/III	Quad II/IV
Averages							
0.0076	0.0071	0.0047	0.0036	-0.0072	-0.0084	-0.0079	-0.0093
Sigmas							
0.0014	0.0011	0.0012	0.0015	0.0010	0.0008	0.0007	0.0007
Min/Max							
0.0050	0.0041	0.0019	-0.0007	-0.0099	-0.0109	-0.0104	-0.0118
0.0122	0.0105	0.0076	0.0062	-0.0052	-0.0061	-0.0059	-0.0077
Range							
0.0072	0.0064	0.0057	0.0069	0.0047	0.0048	0.0045	0.0041

DCA321 COIL SIZE SUMMARY

						3RD SIZING	
15M-50-1023 AUTO-01		15M-50-1024 AUTO-01		15M-50-2024 AUTO-01		15M-50-2025 SEMI-01	
Quad I/III	Quad II/IV	Quad I/III	Quad II/IV	Quad I/III	Quad II/IV	Quad I/III	Quad II/IV
Averages							
0.0044	0.0052	0.0069	0.0077	-0.0125	-0.0125	-0.0116	-0.0122
Sigmas							
0.0015	0.0011	0.0012	0.0012	0.0007	0.0008	0.0008	0.0007
Min/Max							
0.0004	0.0019	0.0043	0.0056	-0.0149	-0.0151	-0.0142	-0.0147
0.0080	0.0076	0.0094	0.0101	-0.0104	-0.0107	-0.0097	-0.0105
Range							
0.0075	0.0058	0.0051	0.0046	0.0045	0.0044	0.0045	0.0042

DCA322 COIL SIZE SUMMARY

	15M-50-1025 AUTO-01		15M-50-1026 AUTO-01		15M-50-2026 AUTO-01		15M-50-2027 AUTO-01	
	Quad I/III	Quad II/IV	Quad I/III	Quad II/IV	Quad I/III	Quad II/IV	Quad I/III	Quad II/IV
Averages								
	0.0051	0.0054	0.0046	0.0050	-0.0078	-0.0086	-0.0056	-0.0058
Sigmas								
	0.0010	0.0009	0.0010	0.0009	0.0007	0.0009	0.0009	0.0009
Min/Max								
	0.0028	0.0028	0.0017	0.0024	-0.0105	-0.0116	-0.0084	-0.0088
	0.0075	0.0072	0.0070	0.0068	-0.0062	-0.0063	-0.0037	-0.0039
Range								
	0.0047	0.0044	0.0053	0.0044	0.0043	0.0053	0.0047	0.0050

Magnet DCA321

	A	B	C	D	E	F	G	H	I
345					Hydraulic Pressure		Average Stress		
346	Seq Number	Date	Time	Vertical	Horizontal	LE Inner	LE Outer	RE Inner	RE Outer
347	1	03/23/92	14:13:1	0	0	-389	14	-489	-327
348	2	03/26/92	07:07:2	0	0	-379	48	-489	-444
349	3	03/27/92	13:00:4	0	0	-363	48	-493	-442
350	4	03/27/92	13:53:2	350	0	165	533	349	-105
351	5	03/27/92	13:55:5	2,500	0	6,309	3,294	7,534	3,055
352	6	03/27/92	13:58:1	4,500	0	12,449	7,282	14,048	7,983
353	7	03/27/92	14:00:3	6,500	0	16,687	10,957	17,778	11,753
354	8	03/27/92	14:03:3	7,000	0	16,458	11,083	17,597	11,886
355	9	03/27/92	14:26:2	7,000	0	15,839	10,922	16,914	11,667
356	10	03/27/92	14:29:1	7,000	500	16,271	11,289	17,340	12,004
357	11	03/27/92	14:30:1	7,000	1,000	16,913	11,753	17,909	12,433
358	12	03/27/92	14:31:1	7,000	1,500	17,372	12,021	18,349	12,805
359	13	03/27/92	14:32:0	7,000	2,000	17,647	12,198	18,611	13,080
360	14	03/27/92	14:32:5	7,000	2,500	17,859	12,348	18,825	13,288
361	15	03/27/92	14:33:4	7,000	3,000	18,015	12,473	19,017	13,428
362	16	03/27/92	14:37:1	4,000	3,000	17,457	11,754	18,467	12,687
363	17	03/27/92	14:41:4	0	0	11,200	8,007	13,103	8,356