

Collar Diameter Measurements of Long Magnets DCA310-315

Attached are tables and plots of the collar diameter measurements of the first three long 50 mm SSC dipoles DCA310 - DCA315. Measurements were taken at 12 inch intervals along the length of the collared coil corresponding roughly to every other collar pack. In addition two diameter measurements were taken at each gauge pack. Measurements were taken at the same azimuthal locations as on the short magnets[1] except only one "horizontal" measurement was made, corresponding to dimension "A-1" in the short magnets. The precise azimuthal locations of some of the measurements differs slightly because the measurements are referenced to certain features on the collar exterior and the long and short magnets use different revisions of the collar laminations: Rev. C and Rev. A respectively[2]. The width of the slot at the pole for instrumentation wires is wider in the Rev. C collars, moving the 85 degree measurement to 83 degrees and the radius on the corners at the collar pickup features has been increased, moving the 52 degree measurement to 53 degrees. These differences give rise respectively to a 0.1 mil increase and a 0.5 mil decrease in the nominal diameters at the two locations. Also, between Rev. A and Rev. C the flats at the tooling alignment/collar pickup features have been moved 5 mils away from the center line[2], increasing the nominal values of dimensions E and F by 10 mils.

Undelected collar diameter measurements were made by the method given in [1]. There is relatively poor consistency among the measurements, even in some cases between the two measurements on the same pack. The measured diameters tend to be systematically larger than the nominal dimensions and than those measured for the short magnets[1]. (The inspection reports[2] indicate good agreement between the Rev. C collars and the drawing and the Rev. A collars used on the short magnets.) This probably indicates that inadequate care was taken by the technicians to assembly the unstressed pack properly, as most assembly errors would tend to increase the apparent diameters. I have not, however, discussed this with the technicians who have done the work, so the source of the problem is not clear.

The plots of the diameters show a high degree of uniformity within each magnet and from magnet to magnet. The "horizontal" (12 degree) diameters are 1-2 mils smaller than the short magnets[1] and the "vertical" (83 degree) diameters are typically 1-2 mils larger than the short magnets. It is not clear at this point if these differences are significant with respect to the measurement uncertainties.

REFERENCES

- [1] J. Strait, Collar deflection measurements of short 50 mm magnets, TS-SSC 91-116, 6/10/91.
- [2] J. Strait and R. Bossert, Evaluation of collar lamination inspection report (SSC 50 mm collar lamination without shims, part# ME-292059 rev.C), TS-SSC 91-063, 4/12/91,

Distribution:

- R. Bossert
- J. Carson
- S. Delchamps
- A. Devred
- W. Koska
- M. Lamm
- T. Skweres
- M. Wake

Collared Coil Measurement Data Sheet

Magnet DCA310

Pos #	Z (inches)	Diameters (inches)					
		Dim A	Dim B	Dim C	Dim D	Dim E	Dim F
		-12°	53°	83°	127°	Left	Right
25	-286	5.352	5.320	5.317	5.320	3.772	3.769
24	-279	5.352	5.319	5.318	5.320	3.770	3.770
23	-267	5.352	5.320	5.319	5.320	3.773	3.771
22	-255	5.352	5.320	5.319	5.320	3.771	3.772
21	-243	5.351	5.322	5.319	5.319	3.770	3.769
20	-231	5.351	5.320	5.318	5.319	3.770	3.771
19	-219	5.352	5.320	5.320	5.320	3.772	3.773
18	-207	5.351	5.321	5.319	5.319	3.770	3.770
17	-195	5.352	5.321	5.318	5.320	3.771	3.771
16	-183	5.352	5.320	5.318	5.320	3.771	3.770
SG	-174.625	5.352	5.322	5.321	5.321	3.770	3.772
SG	-171.5625	5.353	5.322	5.321	5.320	3.772	3.770
15	-171	5.352	5.320	5.318	5.320	3.771	3.772
14	-159	5.352	5.320	5.318	5.320	3.770	3.770
13	-147	5.352	5.320	5.319	5.320	3.772	3.772
12	-135	5.352	5.321	5.318	5.320	3.771	3.772
11	-123	5.351	5.319	5.317	5.320	3.769	3.770
10	-111	5.351	5.320	5.317	5.320	3.772	3.770
9	-99	5.351	5.320	5.318	5.320	3.770	3.771
8	-87	5.351	5.320	5.318	5.320	3.770	3.773
7	-75	5.352	5.321	5.319	5.320	3.772	3.771
6	-63	5.352	5.320	5.318	5.320	3.772	3.770
SG	-59.1875	5.351	5.321	5.321	5.321	3.770	3.771
SG	-56.0625	5.352	5.319	5.319	5.322	3.770	3.770
5	-51	5.351	5.320	5.318	5.320	3.771	3.771
4	-39	5.352	5.321	5.319	5.320	3.772	3.770
3	-27	5.352	5.321	5.319	5.320	3.772	3.770
2	-15	5.352	5.320	5.319	5.320	3.771	3.771
1	-3	5.351	5.320	5.318	5.320	3.771	3.770
1	3	5.354	5.319	5.316	5.319	3.770	3.770
2	15	5.353	5.320	5.316	5.319	3.769	3.770
3	27	5.353	5.320	5.317	5.320	3.770	3.770
4	39	5.354	5.319	5.316	5.320	3.771	3.771
5	51	5.353	5.319	5.315	5.319	3.770	3.769
6	63	5.353	5.319	5.316	5.319	3.771	3.771
7	75	5.353	5.320	5.316	5.319	3.770	3.772
8	87	5.352	5.319	5.315	5.317	3.769	3.769
9	99	5.354	5.319	5.315	5.318	3.770	3.769
10	111	5.352	5.319	5.316	5.320	3.770	3.769
11	123	5.353	5.319	5.316	5.319	3.768	3.770
12	135	5.353	5.320	5.316	5.321	3.770	3.770
13	147	5.353	5.319	5.316	5.319	3.771	3.770
14	159	5.352	5.319	5.316	5.318	3.769	3.769
15	171	5.352	5.318	5.315	5.317	3.769	3.768
16	183	5.354	5.320	5.317	5.319	3.770	3.770
17	195	5.354	5.320	5.317	5.319	3.771	3.770
18	207	5.352	5.319	5.315	5.318	3.770	3.770
19	219	5.354	5.320	5.316	5.319	3.770	3.769
20	231	5.354	5.319	5.316	5.320	3.770	3.769
21	243	5.354	5.320	5.316	5.319	3.769	3.769
22	255	5.353	5.320	5.317	5.319	3.770	3.769
23	267	5.353	5.320	5.317	5.319	3.769	3.771
24	279	5.353	5.319	5.316	5.319	3.771	3.770
25	286	5.353	5.320	5.317	5.318	3.770	3.771

	Unstressed Collar Measurements (inches)					
	Dim A	Dim B	Dim C	Dim D	Dim E	Dim F
	-12°	53°	83°	127°	Left	Right
2"	-	-	-	-	-	-
4"	-	-	-	-	-	-
Average	-	-	-	-	-	-
Nominal	5.351	5.311	5.304	5.311	3.760	3.760

Average	5.3524	5.3199	5.3174	5.3195	3.7705	3.7703
Sigma	0.0010	0.0009	0.0016	0.0009	0.0010	0.0011
Minimum	5.3510	5.3180	5.3150	5.3170	3.7680	3.7680
Maximum	5.3540	5.3220	5.3210	5.3220	3.7730	3.7730
Range	0.0030	0.0040	0.0060	0.0050	0.0050	0.0050

Collared Coil Measurement Data Sheet
Magnet DCA311

Pos #	z (inches) dir. → return	Diameters (inches)					
		Dim. A -12°	Dim. B 53°	Dim. C 83°	Dim. D 127°	Dim. E Left	Dim. F Right
25	-286	5.353	5.320	5.317	5.318	3.770	3.771
24	-279	5.353	5.319	5.316	5.319	3.771	3.770
23	-267	5.353	5.320	5.317	5.319	3.769	3.771
22	-255	5.353	5.320	5.317	5.319	3.770	3.769
21	-243	5.354	5.320	5.316	5.319	3.769	3.769
20	-231	5.354	5.319	5.316	5.320	3.770	3.769
19	-219	5.354	5.320	5.316	5.319	3.770	3.769
18	-207	5.352	5.319	5.315	5.318	3.770	3.770
17	-195	5.354	5.320	5.317	5.319	3.771	3.770
16	-183	5.354	5.320	5.317	5.319	3.770	3.770
SG	-176.75	5.352	5.319	5.316	5.318	3.771	3.768
SG	-173.5	5.352	5.318	5.315	5.318	3.770	3.768
15	-171	5.352	5.318	5.315	5.317	3.769	3.768
14	-159	5.352	5.319	5.316	5.318	3.769	3.769
13	-147	5.353	5.319	5.316	5.319	3.771	3.770
12	-135	5.353	5.320	5.316	5.321	3.770	3.770
11	-123	5.353	5.319	5.316	5.319	3.768	3.770
10	-111	5.352	5.319	5.316	5.320	3.770	3.769
9	-99	5.354	5.319	5.315	5.318	3.770	3.769
8	-87	5.352	5.319	5.315	5.317	3.769	3.769
7	-75	5.353	5.320	5.316	5.319	3.770	3.772
6	-63	5.353	5.319	5.316	5.319	3.771	3.771
SG	-61.25	5.352	5.32	5.318	5.319	3.769	3.770
SG	-58.25	5.352	5.319	5.316	5.318	3.770	3.769
5	-51	5.353	5.319	5.315	5.319	3.770	3.769
4	-39	5.354	5.319	5.316	5.320	3.771	3.771
3	-27	5.353	5.320	5.317	5.320	3.770	3.770
2	-15	5.353	5.320	5.316	5.319	3.769	3.770
1	-3	5.354	5.319	5.316	5.319	3.770	3.770
1	3	5.354	5.319	5.316	5.319	3.770	3.770
2	15	5.353	5.320	5.316	5.319	3.769	3.770
3	27	5.353	5.320	5.317	5.320	3.770	3.770
4	39	5.354	5.319	5.316	5.320	3.771	3.771
5	51	5.353	5.319	5.315	5.319	3.770	3.769
6	63	5.353	5.319	5.316	5.319	3.771	3.771
7	75	5.353	5.320	5.316	5.319	3.770	3.772
8	87	5.352	5.319	5.315	5.317	3.769	3.769
9	99	5.354	5.319	5.315	5.318	3.770	3.769
10	111	5.352	5.319	5.316	5.320	3.770	3.769
11	123	5.353	5.319	5.316	5.319	3.768	3.770
12	135	5.353	5.320	5.316	5.321	3.770	3.770
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18	207	5.352	5.319	5.315	5.318	3.770	3.770
19	219	5.354	5.320	5.316	5.319	3.770	3.769
20	231	5.354	5.319	5.316	5.320	3.770	3.769
21	243	5.354	5.320	5.316	5.319	3.769	3.769
22	255	5.353	5.320	5.317	5.319	3.770	3.769
23	267	5.353	5.320	5.317	5.319	3.769	3.771
24	279	5.353	5.319	5.316	5.319	3.771	3.770
25	286	5.353	5.320	5.317	5.318	3.770	3.771

	Unstressed Collar Measurements (Inches)					
	Dim. A -12°	Dim. B 53°	Dim. C 83°	Dim. D 127°	Dim. E Left	Dim. F Right
2"	5.353	5.314	5.307	5.312	3.763	3.763
4"	5.353	5.312	5.307	5.313	3.765	3.761
Average	5.353	5.313	5.307	5.313	3.764	3.762
Nominal	5.351	5.311	5.304	5.311	3.760	3.760

Average	5.3530	5.3194	5.3161	5.3189	3.7699	3.7697
Sigma	0.0008	0.0006	0.0007	0.0009	0.0008	0.0009
Minimum	5.3520	5.3180	5.3150	5.3170	3.7680	3.7680
Maximum	5.3540	5.3200	5.3180	5.3210	3.7710	3.7720
Range	0.0020	0.0020	0.0030	0.0040	0.0030	0.0040

Collared Coil Measurement Data Sheet
Magnet DCA312

Pos #	Z (Inches) Ht. → return	Diameters (Inches)					
		Dim A -12°	Dim B 53°	Dim C 83°	Dim D 127°	Dim E Left	Dim F Right
25	-286	5.353	5.321	5.317	5.320	3.771	3.770
24	-279	5.354	5.320	5.316	5.319	3.771	3.770
23	-267	5.353	5.320	5.316	5.318	3.769	3.769
22	-255	5.353	5.320	5.317	5.319	3.771	3.771
21	-243	5.354	5.320	5.316	5.319	3.770	3.769
20	-231	5.353	5.320	5.316	5.319	3.770	3.769
19	-219	5.354	5.319	5.316	5.319	3.770	3.771
18	-207	5.354	5.320	5.316	5.319	3.770	3.771
17	-195	5.353	5.320	5.317	5.320	3.771	3.771
16	-183	5.353	5.319	5.316	5.320	3.771	3.769
15	-171	5.353	5.319	5.315	5.319	3.768	3.769
14	-159	5.353	5.320	5.317	5.320	3.769	3.772
13	-147	5.353	5.320	5.318	5.319	3.770	3.770
12	-135	5.354	5.319	5.316	5.319	3.769	3.769
11	-123	5.353	5.319	5.317	5.319	3.769	3.772
10	-111	5.353	5.318	5.316	5.319	3.771	3.768
9	-99	5.353	5.320	5.316	5.320	3.770	3.770
8	-87	5.353	5.321	5.317	5.318	3.770	3.770
7	-75	5.353	5.320	5.317	5.320	3.772	3.771
6	-63	5.354	5.319	5.319	5.320	3.771	3.772
SG	-59	5.353	5.32	5.319	5.319	3.769	3.769
SG	-56	5.352	5.32	5.318	5.318	3.770	3.769
5	-51	5.353	5.319	5.317	5.319	3.770	3.772
4	-39	5.354	5.319	5.318	5.320	3.770	3.769
3	-27	5.353	5.320	5.318	5.320	3.771	3.769
2	-15	5.353	5.321	5.317	5.319	3.771	3.769
SG	-10.5	5.352	5.318	5.317	5.319	3.768	3.769
SG	-7.5	5.353	5.319	5.318	5.319	3.769	3.769
1	-3	5.354	5.319	5.316	5.319	3.770	3.770
1	3	5.353	5.319	5.316	5.319	3.771	3.771
2	15	5.354	5.321	5.317	5.319	3.770	3.771
3	27	5.354	5.320	5.318	5.320	3.771	3.771
4	39	5.354	5.320	5.317	5.320	3.772	3.769
5	51	5.354	5.320	5.318	5.320	3.771	3.770
6	63	5.354	5.319	5.317	5.320	3.771	3.772
7	75	5.353	5.320	5.317	5.319	3.772	3.771
8	87	5.354	5.321	5.318	5.321	3.770	3.770
9	99	5.353	5.321	5.317	5.319	3.770	3.772
10	111	5.354	5.320	5.317	5.320	3.771	3.770
11	123	5.354	5.320	5.316	5.320	3.772	3.772
12	135	5.354	5.320	5.317	5.320	3.771	3.771
13	147	5.354	5.319	5.318	5.319	3.771	3.770
14	159	5.353	5.320	5.316	5.319	3.769	3.770
15	171	5.353	5.320	5.316	5.319	3.768	3.770
16	183	5.353	5.320	5.317	5.319	3.771	3.772
17	195	5.352	5.320	5.317	5.320	3.771	3.773
18	207	5.352	5.321	5.317	5.319	3.769	3.769
19	219	5.354	5.320	5.317	5.321	3.771	3.772
20	231	5.354	5.319	5.318	5.319	3.771	3.771
21	243	5.353	5.320	5.317	5.321	3.772	3.770
22	255	5.353	5.320	5.317	5.320	3.771	3.771
23	267	5.353	5.320	5.317	5.320	3.772	3.770
24	279	5.354	5.320	5.317	5.319	3.771	3.769
25	286	5.354	5.319	5.316	5.320	3.770	3.772

	Unstressed Collar Measurements (Inches)					
	Dim A -12°	Dim B 53°	Dim C 83°	Dim D 127°	Dim E Left	Dim F Right
2"	5.352	5.312	5.304	5.311	3.762	3.759
4"	5.352	5.313	5.307	5.312	3.761	3.765
Average	5.352	5.313	5.306	5.312	3.762	3.762
Nominal	5.351	5.311	5.304	5.311	3.760	3.760

Average	5.3533	5.3198	5.3169	5.3194	3.7704	3.7703
Sigma	0.0006	0.0007	0.0008	0.0007	0.0011	0.0012
Minimum	5.3520	5.3180	5.3150	5.3180	3.7680	3.7680
Maximum	5.3540	5.3210	5.3190	5.3210	3.7720	3.7730
Range	0.0020	0.0030	0.0040	0.0030	0.0040	0.0050

Collared Coil Measurement Data Sheet

Magnet DCA313

Pos. #	z (Inches) Dir. z return	Diameters (Inches)					
		Dim. A -12°	Dim. B 53°	Dim. C 83°	Dim. D 127°	Dim. E Left	Dim. F Right
25	-286	5.351	5.320	5.317	5.319	3.769	3.769
24	-279	5.353	5.320	5.317	5.319	3.769	3.769
23	-267	5.353	5.320	5.316	5.319	3.769	3.769
22	-255	5.353	5.320	5.318	5.318	3.771	3.769
21	-243	5.353	5.319	5.317	5.319	3.772	3.770
20	-231	5.353	5.319	5.316	5.318	3.769	3.770
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12	-135	5.354	5.320	5.317	5.319	3.771	3.771
11	-123	5.354	5.320	5.317	5.320	3.771	3.771
10	-111	5.353	5.319	5.316	5.319	3.769	3.769
9	-99	5.354	5.320	5.317	5.321	3.771	3.770
8	-87	5.354	5.321	5.317	5.320	3.769	3.771
7	-75	5.354	5.319	5.317	5.320	3.773	3.770
6	-63	5.354	5.320	5.318	5.320	3.771	3.771
SG	-61	5.353	5.32	5.319	5.321	3.771	3.769
SG	-57.75	5.352	5.32	5.318	5.320	3.770	3.770
5	-51	5.354	5.319	5.317	5.319	3.769	3.770
4	-39	5.354	5.319	5.317	5.319	3.769	3.769
3	-27	5.354	5.320	5.317	5.319	3.770	3.770
2	-15	5.354	5.319	5.317	5.319	3.770	3.769
SG	-12.75	5.353	5.320	5.318	5.320	3.769	3.770
SG	-9.5	5.353	5.319	5.317	5.321	3.769	3.770
1	-3	5.354	5.320	5.317	5.320	3.771	3.771
1	3	5.355	5.320	5.318	5.320	3.771	3.770
2	15	5.353	5.321	5.315	5.320	3.771	3.769
3	27	5.354	5.319	5.317	5.321	3.770	3.771
4	39	5.352	5.319	5.315	5.320	3.770	3.769
5	51	5.353	5.322	5.318	5.320	3.769	3.770
6	63	5.353	5.320	5.317	5.319	3.770	3.770
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8	87	5.353	5.319	5.318	5.319	3.770	3.771
9	99	5.353	5.318	5.317	5.319	3.772	3.769
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16	183	5.353	5.318	5.316	5.318	3.768	3.768
17	195	5.354	5.318	5.317	5.318	3.770	3.768
18	207	5.353	5.318	5.318	5.318	3.769	3.769
19	219	5.353	5.319	5.317	5.317	3.767	3.767
20	231	5.353	5.320	5.317	5.318	3.768	3.769
21	243	5.353	5.319	5.316	5.319	3.769	3.768
22	255	5.352	5.320	5.316	5.320	3.770	3.769
23	267	5.353	5.319	5.317	5.318	3.769	3.769
24	279	5.353	5.319	5.317	5.318	3.769	3.768
25	286	5.352	5.318	5.316	5.319	3.768	3.768

	Unstressed Collar Measurements (Inches)					
	Dim. A -12°	Dim. B 53°	Dim. C 83°	Dim. D 127°	Dim. E Left	Dim. F Right
2°	5.356	5.314	5.310	5.312	3.762	3.762
4°	5.353	5.313	5.307	5.316	3.762	3.763
Average	5.356	5.314	5.309	5.314	3.762	3.763
Nominal	5.351	5.311	5.304	5.311	3.760	3.760

Average	5.3532	5.3195	5.3169	5.3192	3.7700	3.7695
Sigma	0.0007	0.0009	0.0008	0.0009	0.0013	0.0011
Minimum	5.3510	5.3180	5.3150	5.3170	3.7670	3.7670
Maximum	5.3550	5.3220	5.3190	5.3210	3.7730	3.7710
Range	0.0040	0.0040	0.0040	0.0040	0.0060	0.0040

Collared Coil Measurement Data Sheet

Magnet DCA314

Pos. #	z (inches) int. - return	Diameters (inches)					
		Dim. A -12°	Dim. B 53°	Dim. C 83°	Dim. D 127°	Dim. E Left	Dim. F Right
25	-286	5.351	5.318	5.316	5.318	3.769	3.769
24	-279	5.352	5.319	5.316	5.318	3.770	3.769
23	-267	5.351	5.317	5.316	5.318	3.768	3.769
22	-255	5.350	5.318	5.316	5.318	3.769	3.769
21	-243	5.352	5.319	5.316	5.319	3.768	3.769
20	-231	5.353	5.317	5.315	5.318	3.769	3.768
19	-219	5.353	5.320	5.317	5.319	3.769	3.769
18	-207	5.350	5.317	5.315	5.318	3.769	3.769
17	-195	5.350	5.318	5.317	5.318	3.769	3.770
16	-183	5.351	5.319	5.317	5.318	3.769	3.769
15	-171	5.350	5.316	5.315	5.316	3.768	3.769
14	-159	5.351	5.319	5.317	5.319	3.769	3.769
13	-147	5.350	5.318	5.316	5.318	3.769	3.769
12	-135	5.351	5.317	5.315	5.317	3.769	3.769
11	-123	5.350	5.317	5.315	5.317	3.768	3.767
10	-111	5.352	5.319	5.316	5.318	3.771	3.769
9	-99	5.353	5.319	5.316	5.318	3.770	3.769
8	-87	5.350	5.318	5.315	5.316	3.769	3.769
7	-75	5.351	5.319	5.316	5.319	3.769	3.769
6	-63	5.350	5.318	5.316	5.317	3.768	3.768
5G	-59.375	5.352	5.320	5.317	5.319	3.768	3.769
5G	-56	5.351	5.320	5.317	5.318	3.768	3.768
5	-51	5.352	5.319	5.316	5.318	3.769	3.769
4	-39	5.353	5.319	5.316	5.319	3.770	3.771
3	-27	5.353	5.321	5.318	5.320	3.771	3.770
2	-15	5.351	5.319	5.316	5.319	3.769	3.768
5G	-10.75	5.352	5.318	5.316	5.319	3.768	3.767
5G	-7.5	5.352	5.318	5.315	5.318	3.769	3.768
1	-3	5.353	5.319	5.316	5.320	3.770	3.770
1	3	5.353	5.320	5.317	5.318	3.768	3.770
2	15	5.352	5.319	5.315	5.317	3.768	3.769
3	27	5.351	5.318	5.316	5.318	3.770	3.770
4	39	5.351	5.316	5.314	5.316	3.770	3.768
5	51	5.351	5.319	5.318	5.318	3.769	3.770
6	63	5.351	5.318	5.315	5.317	3.768	3.768
7	75	5.352	5.318	5.316	5.318	3.768	3.769
8	87	5.352	5.320	5.318	5.318	3.770	3.769
9	99	5.353	5.318	5.317	5.319	3.770	3.770
10	111	5.352	5.318	5.316	5.318	3.767	3.769
11	123	5.350	5.319	5.317	5.319	3.768	3.770
12	135	5.351	5.318	5.316	5.318	3.768	3.769
13	147	5.351	5.319	5.316	5.317	3.767	3.770
14	159	5.351	5.319	5.316	5.318	3.769	3.769
15	171	5.352	5.318	5.315	5.317	3.769	3.768
16	183	5.353	5.318	5.317	5.319	3.768	3.770
17	195	5.351	5.319	5.317	5.318	3.769	3.768
18	207	5.351	5.318	5.316	5.318	3.767	3.768
19	219	5.352	5.318	5.316	5.319	3.767	3.768
20	231	5.352	5.318	5.316	5.319	3.768	3.769
21	243	5.352	5.318	5.317	5.319	3.769	3.769
22	255	5.351	5.318	5.317	5.321	3.767	3.768
23	267	5.351	5.319	5.316	5.317	3.768	3.768
24	279	5.352	5.318	5.317	5.318	3.768	3.769
25	286	5.353	5.317	5.315	5.318	3.768	3.768

	Unstressed Collar Measurements (inches)					
	Dim. A -12°	Dim. B 53°	Dim. C 83°	Dim. D 127°	Dim. E Left	Dim. F Right
2°	5.358	5.311	5.304	5.311	3.761	3.772
4°	5.352	5.311	5.306	5.312	3.765	3.766
Average	5.355	5.311	5.305	5.312	3.763	3.769
Nominal	5.351	5.311	5.304	5.311	3.760	3.760

Average	5.3515	5.3184	5.3161	5.3181	3.7687	3.7689
Sigma	0.0010	0.0010	0.0009	0.0010	0.0010	0.0008
Minimum	5.3500	5.3160	5.3140	5.3160	3.7670	3.7670
Maximum	5.3530	5.3210	5.3180	5.3210	3.7710	3.7710
Range	0.0030	0.0050	0.0040	0.0050	0.0040	0.0040

Collared Coil Measurement Data Sheet

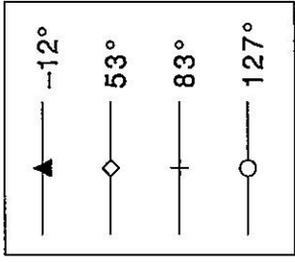
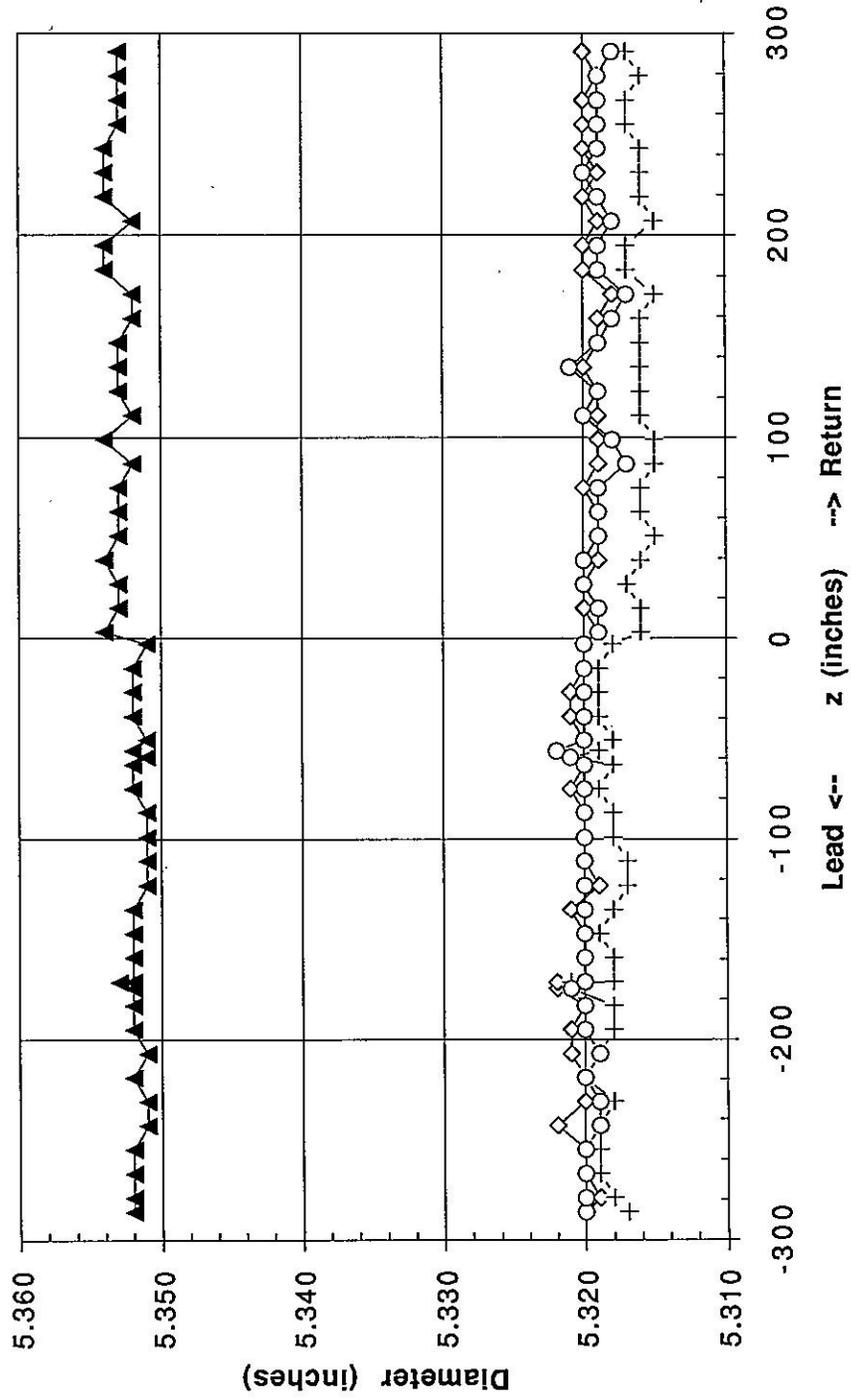
Magnet DCA315

Pos. #	z (Inches) at return	Diameters (Inches)					
		Dim. A	Dim. B	Dim. C	Dim. D	Dim. E	Dim. F
		-12°	53°	83°	127°	Left	Right
25	-286	5.352	5.320	5.317	5.318	3.766	3.770
24	-279	5.351	5.318	5.316	5.317	3.768	3.769
23	-267	5.352	5.318	5.315	5.316	3.767	3.768
22	-255	5.352	5.319	5.316	5.318	3.767	3.770
21	-243	5.351	5.318	5.316	5.317	3.768	3.769
20	-231	5.351	5.318	5.315	5.317	3.767	3.769
19	-219	5.352	5.319	5.317	5.317	3.768	3.768
18	-207	5.351	5.318	5.316	5.316	3.768	3.768
17	-195	5.350	5.319	5.316	5.316	3.768	3.768
16	-183	5.352	5.317	5.316	5.317	3.767	3.769
15	-171	5.351	5.316	5.314	5.317	3.766	3.768
14	-159	5.354	5.318	5.316	5.318	3.768	3.768
13	-147	5.352	5.318	5.317	5.319	3.768	3.769
12	-135	5.352	5.318	5.316	5.317	3.767	3.769
11	-123	5.352	5.319	5.316	5.317	3.768	3.769
10	-111	5.351	5.318	5.316	5.317	3.767	3.767
9	-99	5.351	5.318	5.315	5.317	3.768	3.769
8	-87	5.351	5.318	5.315	5.316	3.768	3.766
7	-75	5.352	5.318	5.317	5.318	3.768	3.769
6	-63	5.352	5.319	5.316	5.318	3.768	3.770
SG	-59	5.350	5.319	5.316	5.317	3.768	3.768
SG	-55	5.351	5.318	5.316	5.316	3.768	3.766
5	-51	5.351	5.319	5.316	5.317	3.768	3.769
4	-39	5.352	5.319	5.317	5.319	3.769	3.769
3	-27	5.351	5.319	5.316	5.317	3.769	3.769
2	-15	5.353	5.320	5.318	5.319	3.768	3.770
SG	-10.75	5.352	5.316	5.315	5.317	3.765	3.767
SG	-7.5	5.350	5.316	5.315	5.317	3.766	3.768
1	-3	5.353	5.316	5.314	5.318	3.768	3.768
1	3	5.351	5.318	5.316	5.317	3.767	3.769
2	15	5.352	5.319	5.317	5.319	3.768	3.769
3	27	5.351	5.317	5.315	5.317	3.768	3.767
4	39	5.350	5.318	5.316	5.317	3.768	3.767
5	51	5.351	5.319	5.316	5.317	3.768	3.767
6	63	5.350	5.319	5.315	5.316	3.767	3.767
7	75	5.352	5.318	5.316	5.318	3.769	3.769
8	87	5.351	5.320	5.318	5.318	3.769	3.769
9	99	5.351	5.318	5.315	5.317	3.767	3.769
10	111	5.353	5.317	5.315	5.317	3.768	3.768
11	123	5.352	5.318	5.316	5.318	3.770	3.769
12	135	5.352	5.318	5.317	5.317	3.770	3.767
13	147	5.352	5.318	5.315	5.316	3.767	3.768
14	159	5.351	5.316	5.316	5.316	3.766	3.767
15	171	5.351	5.318	5.314	5.316	3.767	3.766
16	183	5.351	5.318	5.316	5.317	3.769	3.768
17	195	5.351	5.317	5.314	5.317	3.767	3.769
18	207	5.351	5.316	5.314	5.316	3.767	3.767
19	219	5.352	5.318	5.315	5.317	3.767	3.767
20	231	5.351	5.317	5.316	5.317	3.767	3.768
21	243	5.350	5.318	5.316	5.318	3.769	3.770
22	255	5.351	5.318	5.316	5.317	3.768	3.768
23	267	5.352	5.318	5.317	5.319	3.768	3.769
24	279	5.351	5.319	5.316	5.317	3.768	3.769
25	286	5.351	5.317	5.316	5.318	3.767	3.768

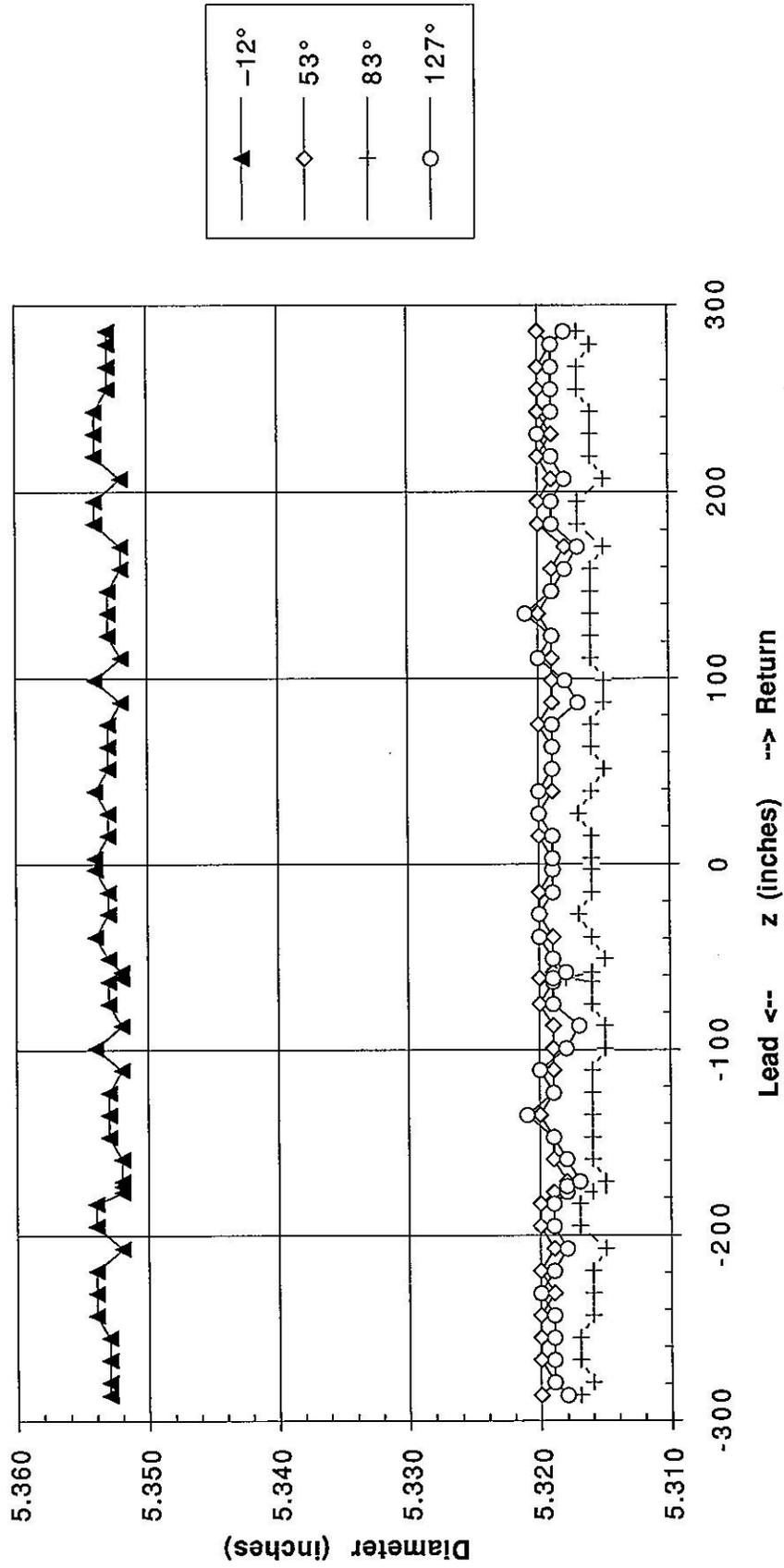
	Unstressed Collar Measurements (Inches)					
	Dim. A	Dim. B	Dim. C	Dim. D	Dim. E	Dim. F
	-12°	53°	83°	127°	Left	Right
2"	5.351	5.316	5.315	5.310	3.765	3.763
4"	5.351	5.314	5.317	5.306	3.764	3.767
Average	5.351	5.315	5.316	5.308	3.765	3.765
Nominal	5.351	5.311	5.304	5.311	3.760	3.760

Average	5.3514	5.3180	5.3158	5.3172	3.7677	3.7682
Sigma	0.0008	0.0010	0.0009	0.0009	0.0010	0.0011
Minimum	5.3500	5.3160	5.3140	5.3160	3.7650	3.7660
Maximum	5.3540	5.3200	5.3180	5.3190	3.7700	3.7700
Range	0.0040	0.0040	0.0040	0.0030	0.0050	0.0040

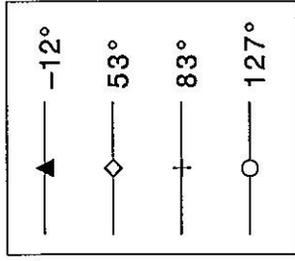
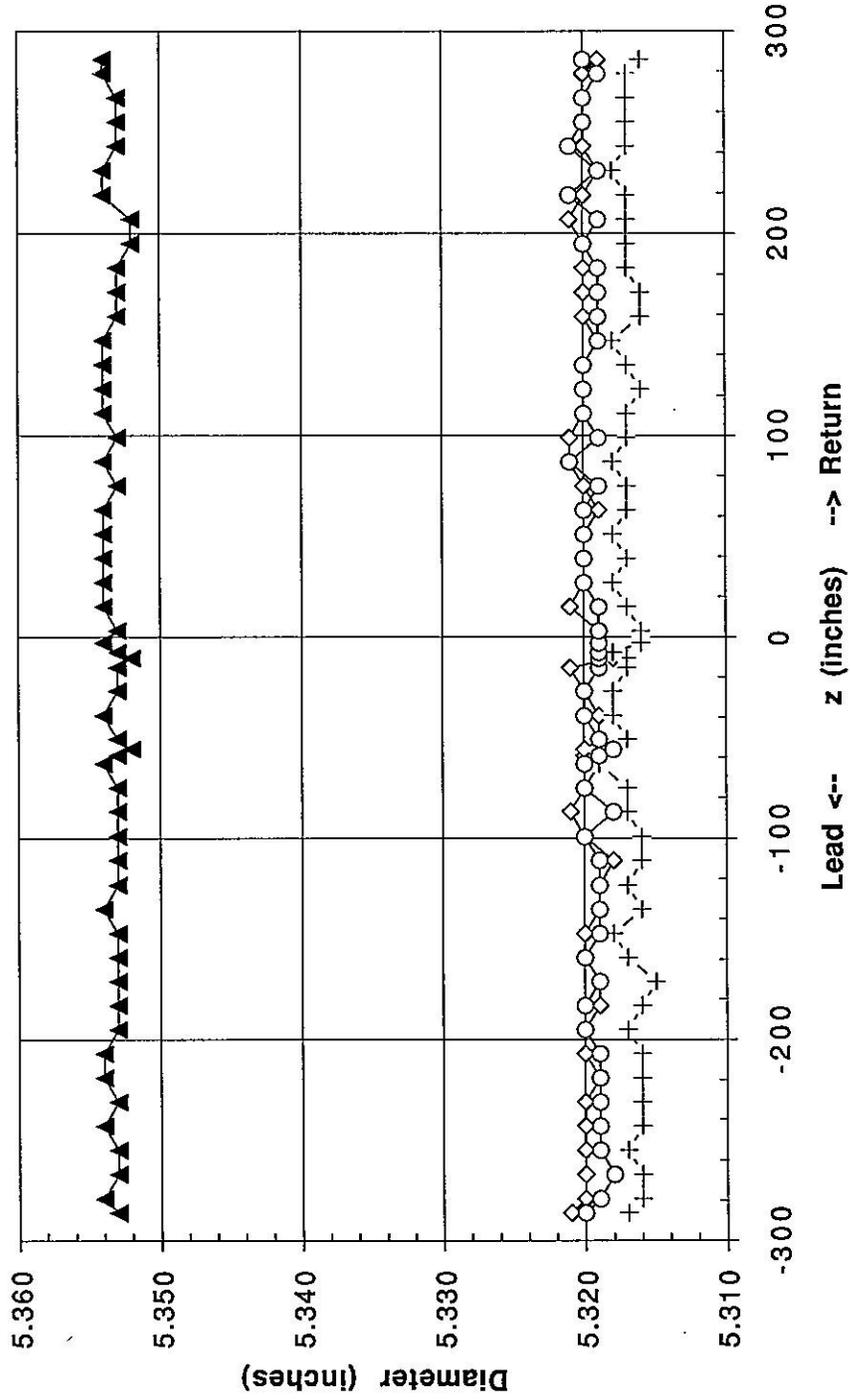
DCA310 Collared Coil Diameters



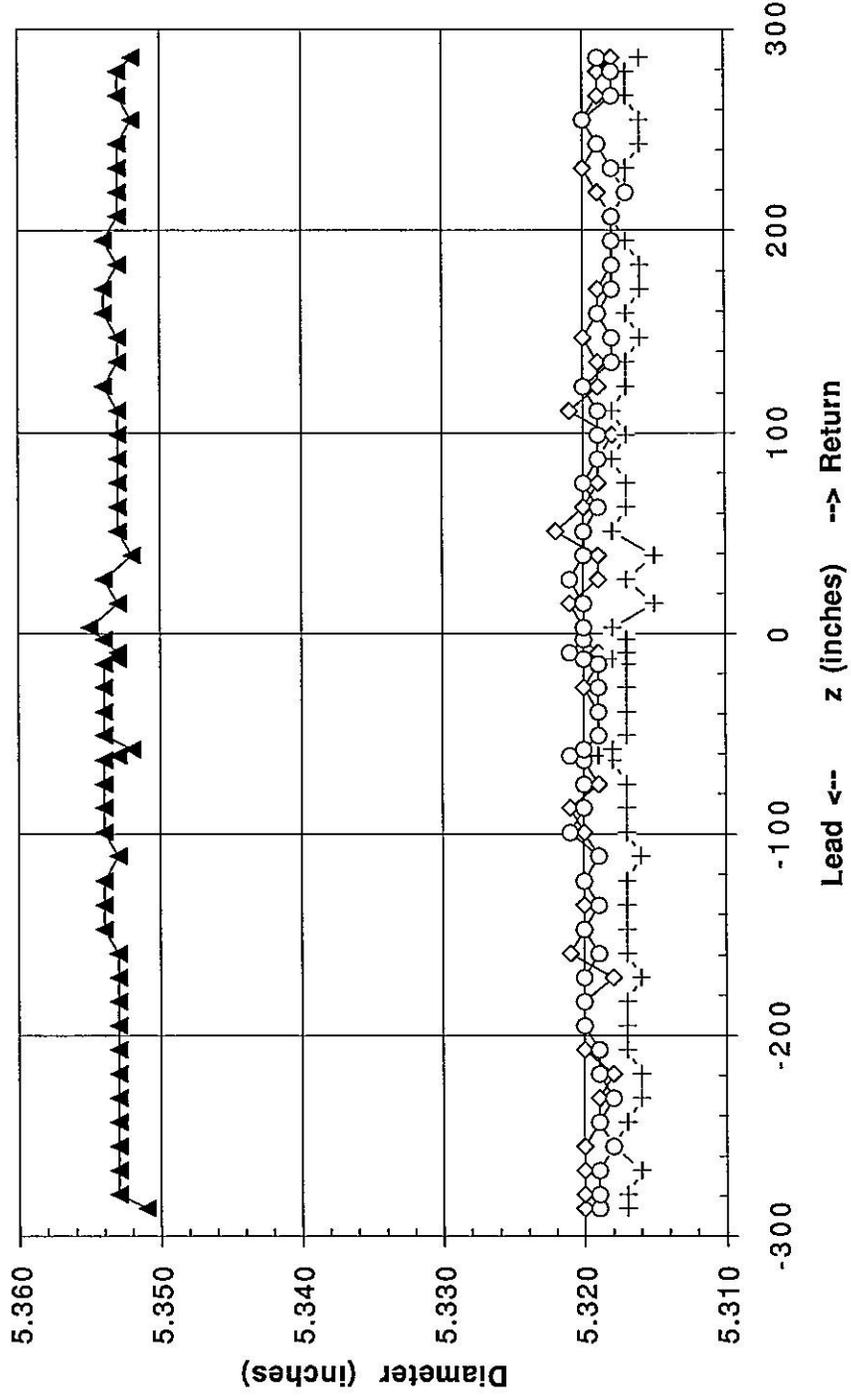
DCA311 Collared Coil Diameters



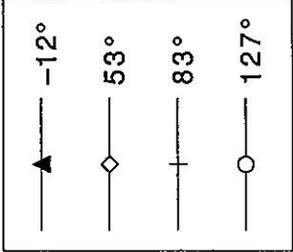
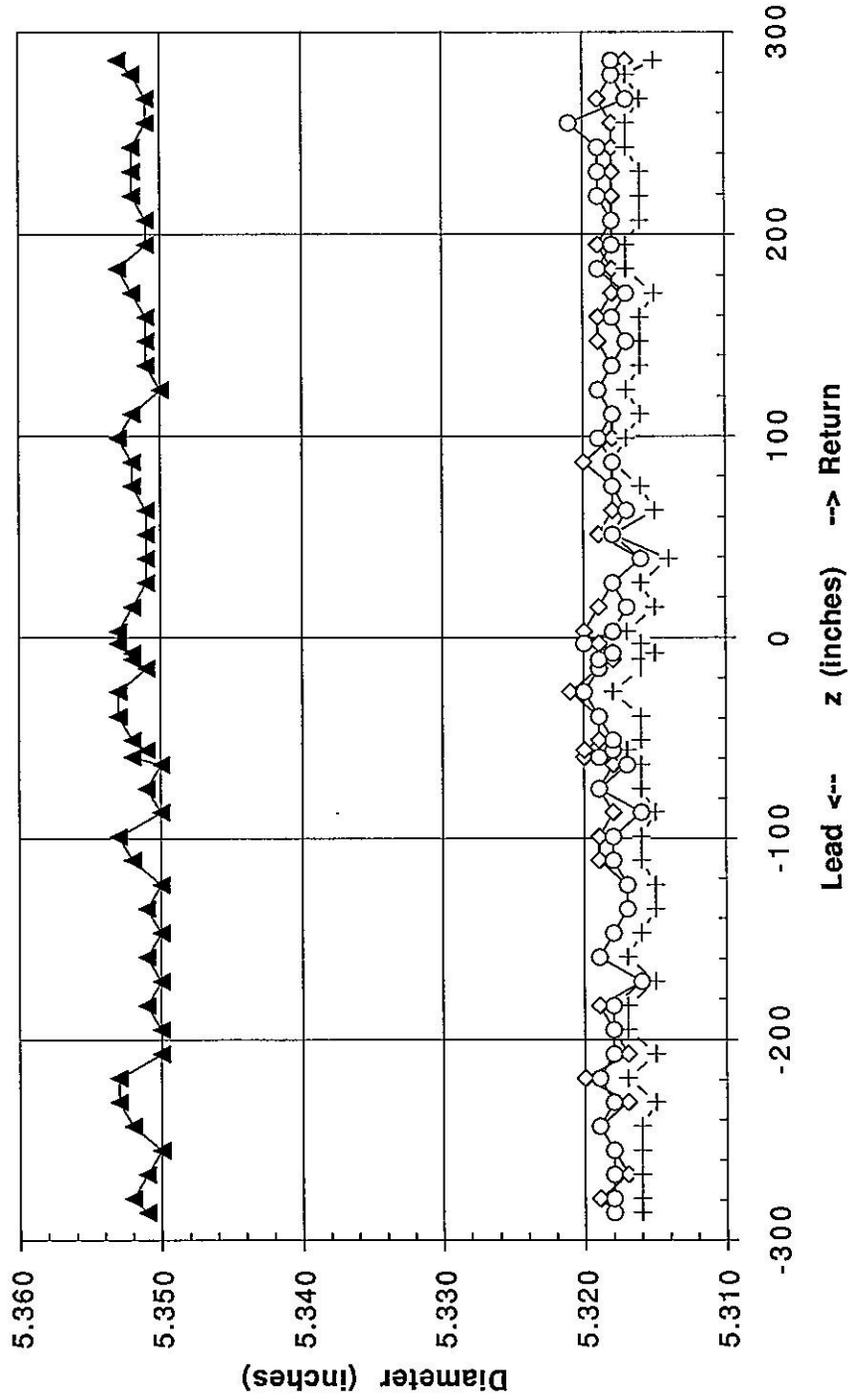
DCA312 Collared Coil Diameters



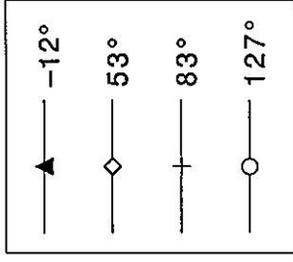
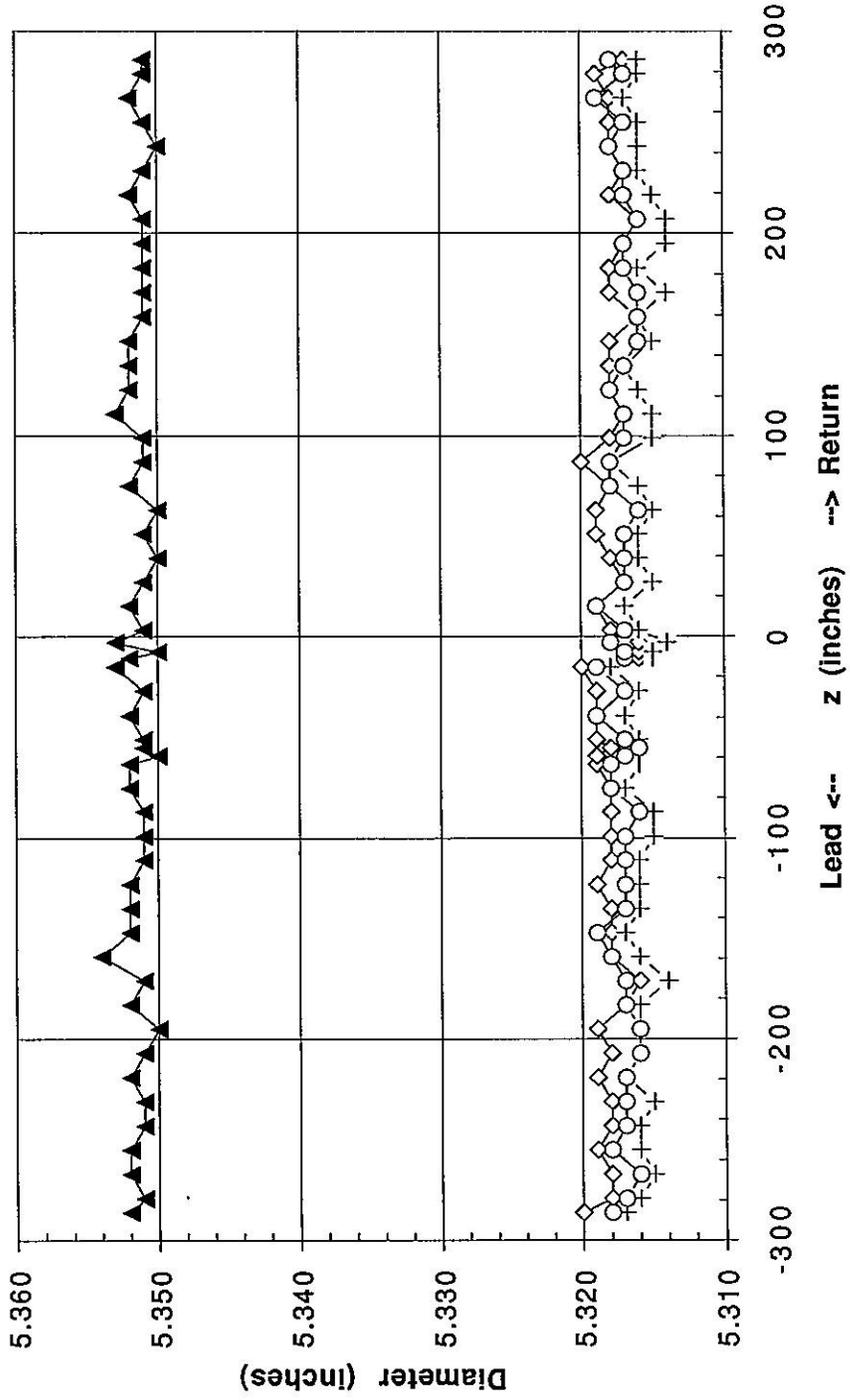
DCA313 Collared Coil Diameters



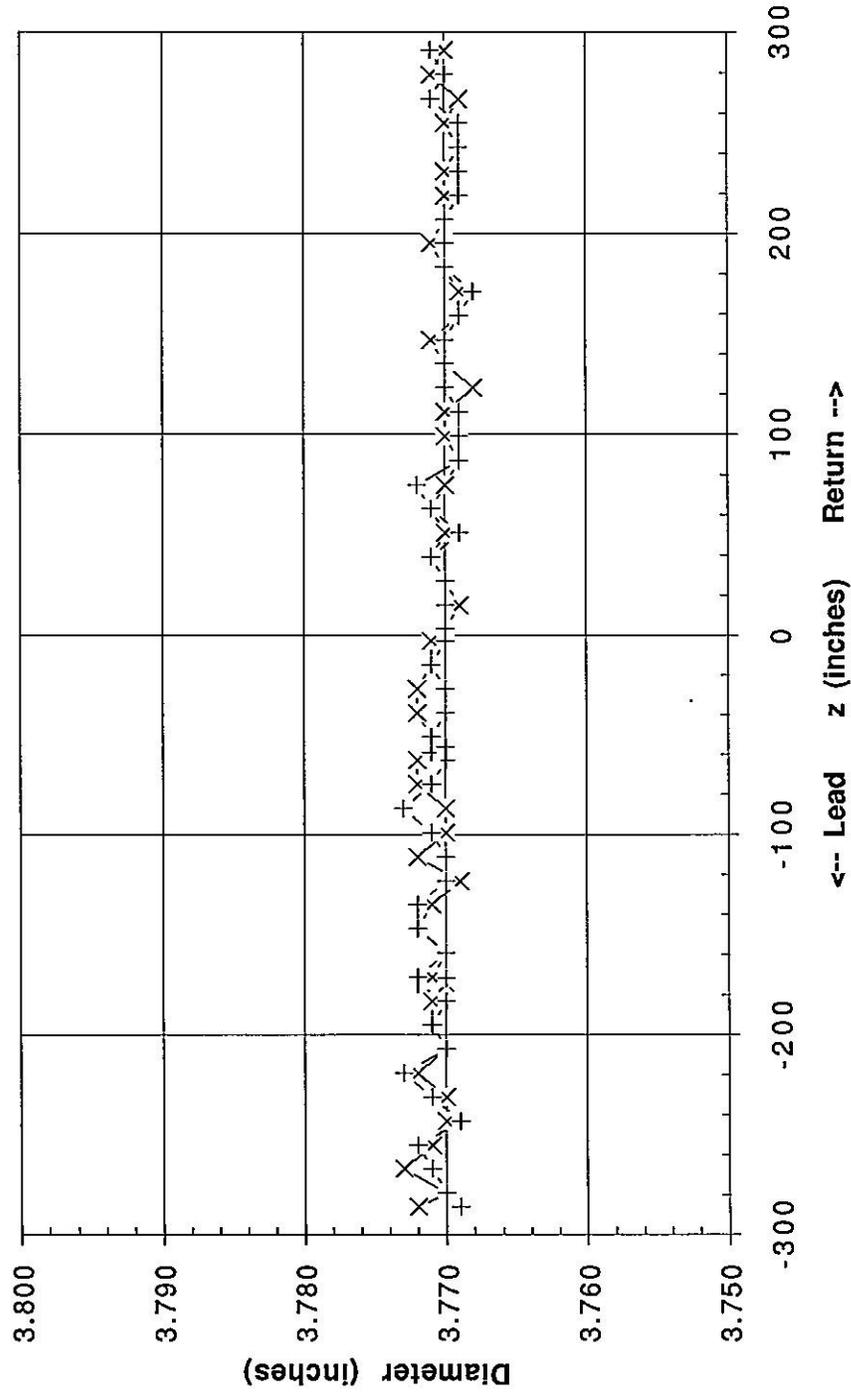
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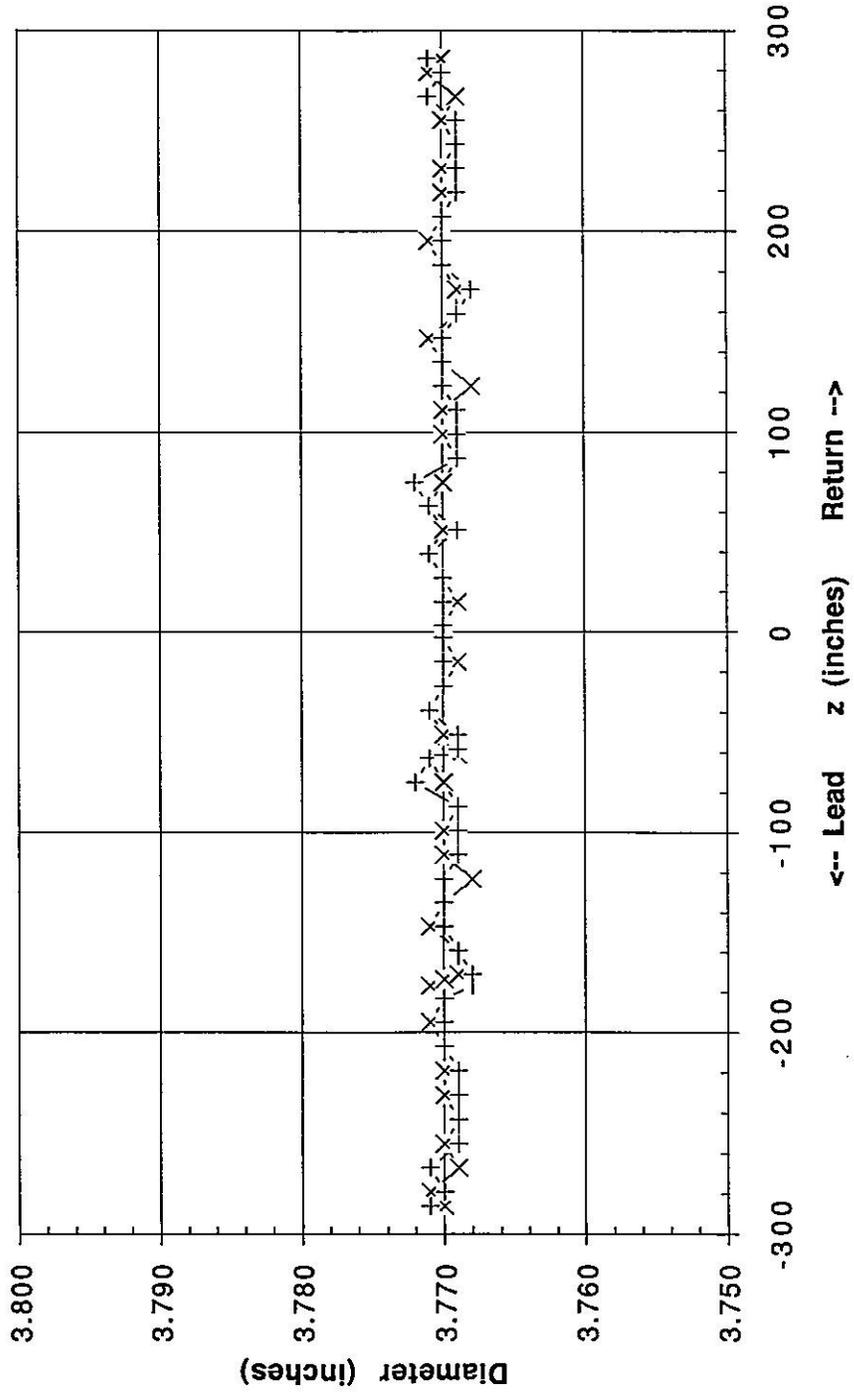
DCA315 Collared Coil Diameters



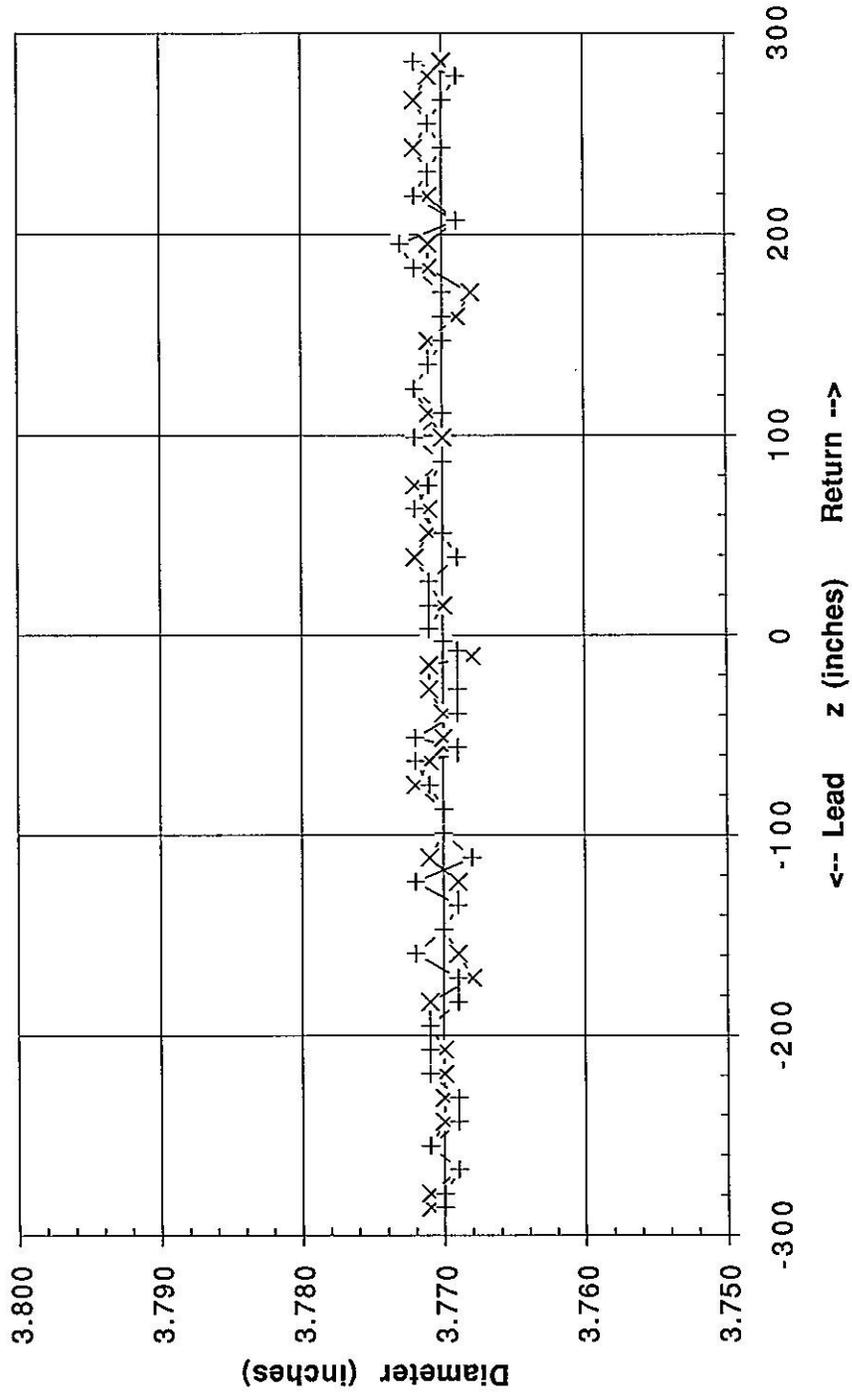
DCA310 Collar Heights at Alignment/Pick-up Flats



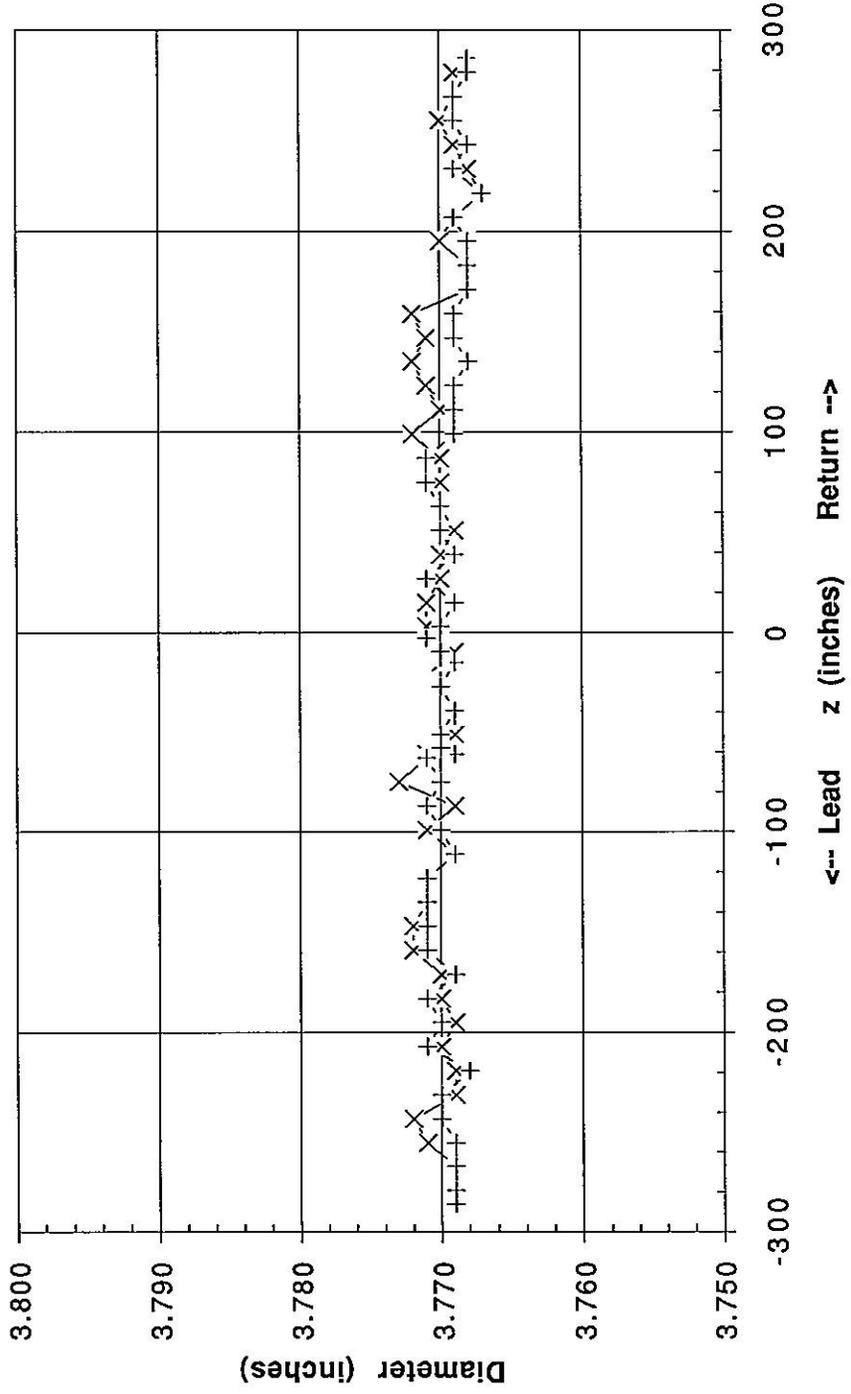
DCA311 Collar Heights at Alignment/Pick-up Flats



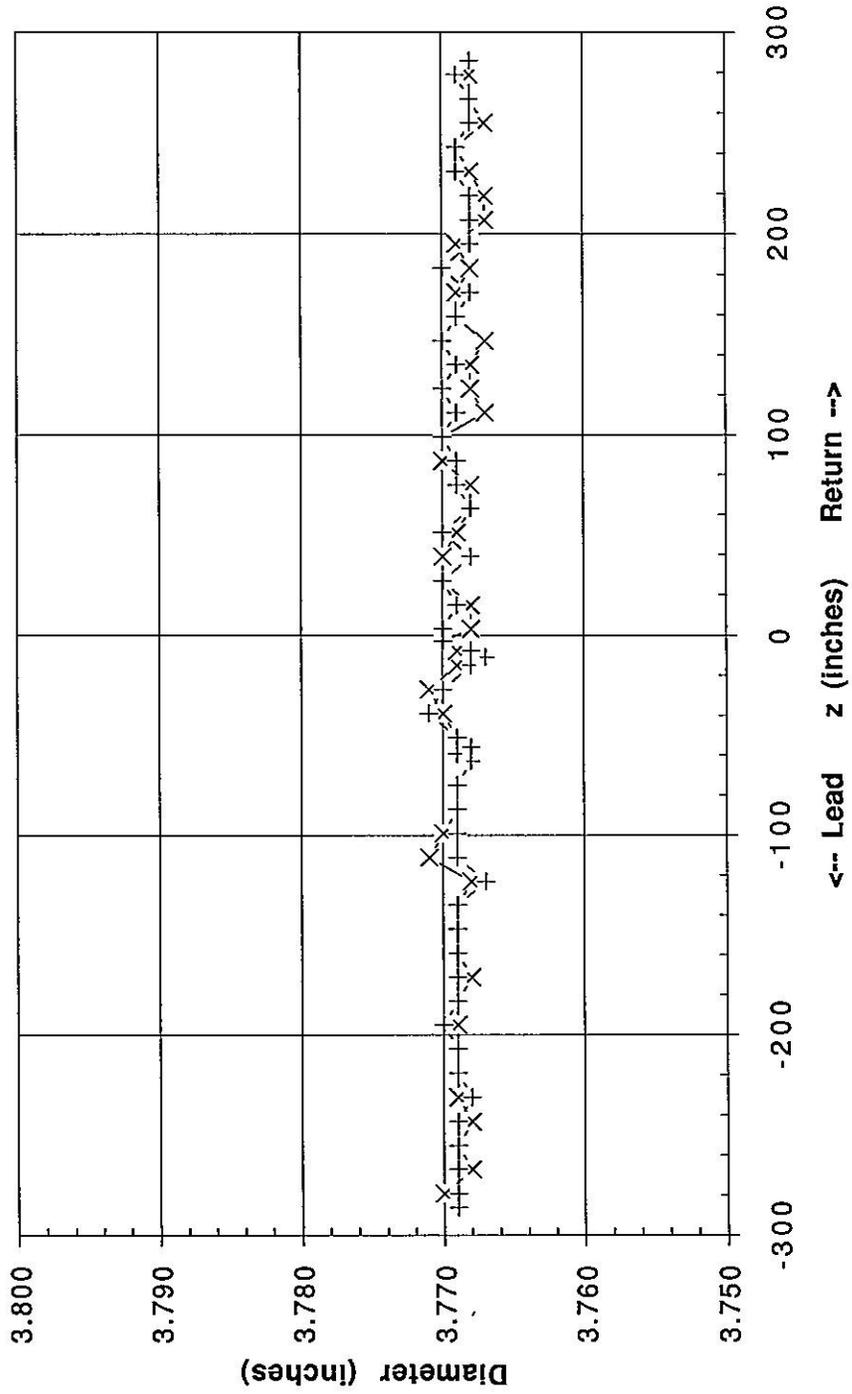
DCA312 Collar Heights at Alignment/Pick-up Flats



DCA313 Collar Heights at Alignment/Pick-up Flats



DCA314 Collar Heights at Alignment/Pick-up Flats



DCA315 Collar Heights at Alignment/Pick-up Flats

