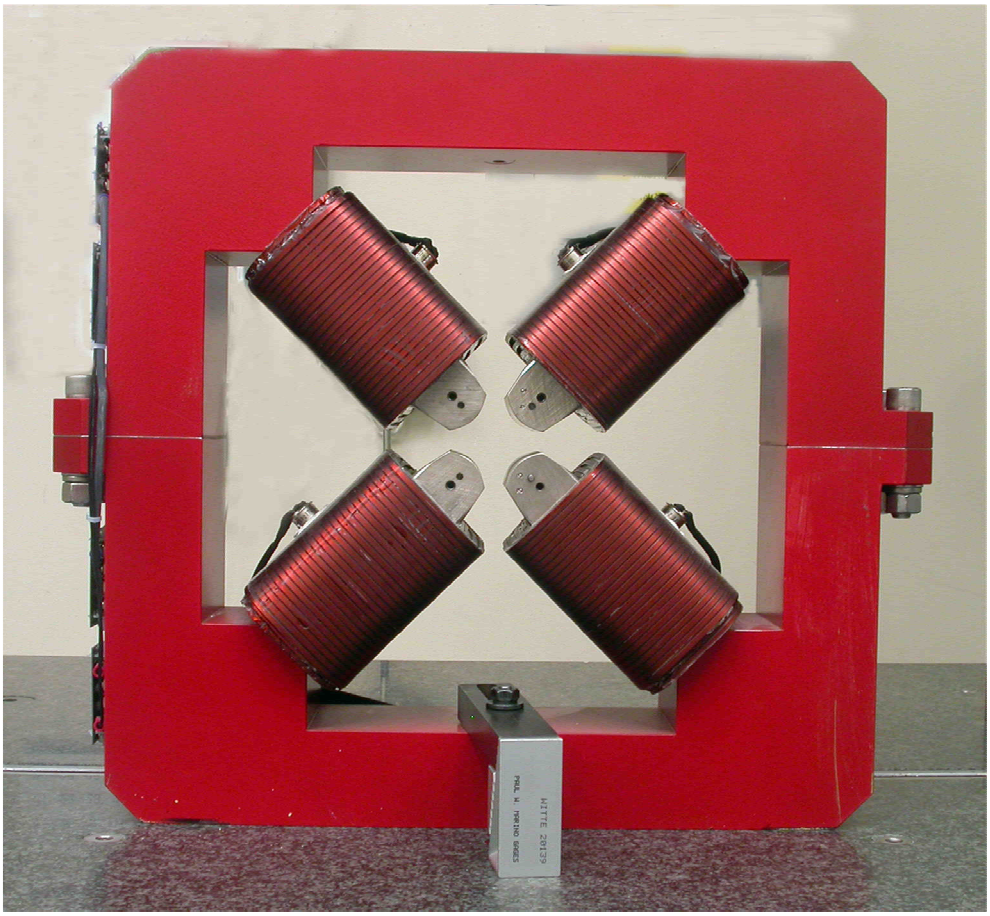
SLAC
NATIONAL ACCELERATOR LABORATORY

LCLS-II

LCLS II Injector Quadrupole Fiducialization Report



Barcode # : ' 002737

Beamline Name: QE01B

Coordinate System Setup

Spatial Alignment

The Spatiai Alignment of the magnet is created through a composite best-fit of the pole tips. Each pole tip scanned .150 inch inboard from the upstream magnet face and the downstream magnet face. A composite best-fit of the upstream poles and the downstream poles is made with the nominal pole tip shape and location. An axis is created through the two best-fit centerpoints. This axis is the spatial alinment of the magnet and defines the Z axis.

Planar Alignment

The Planar Alignment of the magnet is the created by averaging the rotations of the composite best-fits of the upstream pole tips and downstream pole tips. This direction defines the Y and X directions of the magnet.

Coordinate Origins

The origins of the magnet coordinate system are as follows. The XY origin lies on the axis of spatial alignment. The Z origin is the intersection of the mid-plane between the upstream and downstream magnet faces and the Z axi

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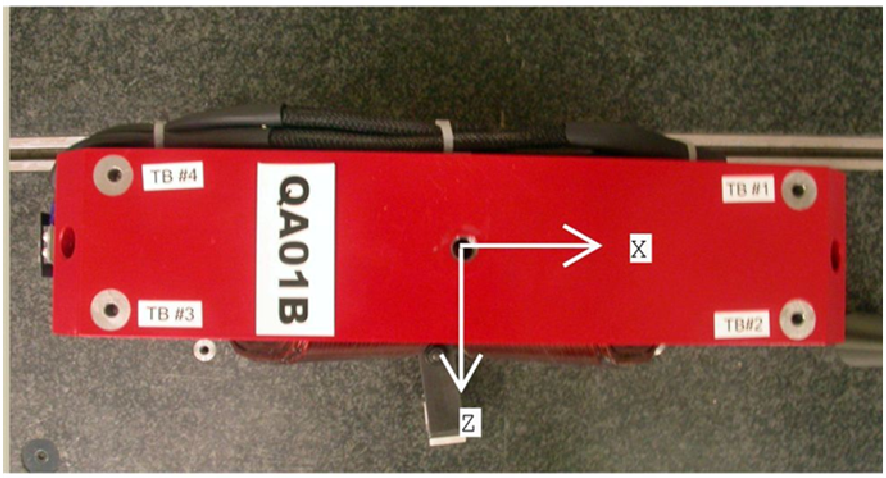
Tooling Ball Locations



Tooling Ball Locations

Tooling Ball	X Coord.	Y Coord.	Z Coord.
Ball #1	6.49969	8.87944	-1.24990
Ball #2	6.50086	8.88184	1.25027
Ball #3	-6.49923	8.88224	1.25092
Ball #4	-6.49946	8.88039	-1.24861

Tooling Ball Locations are 1 inch above unpainted surface pads

Dimensions in Inch

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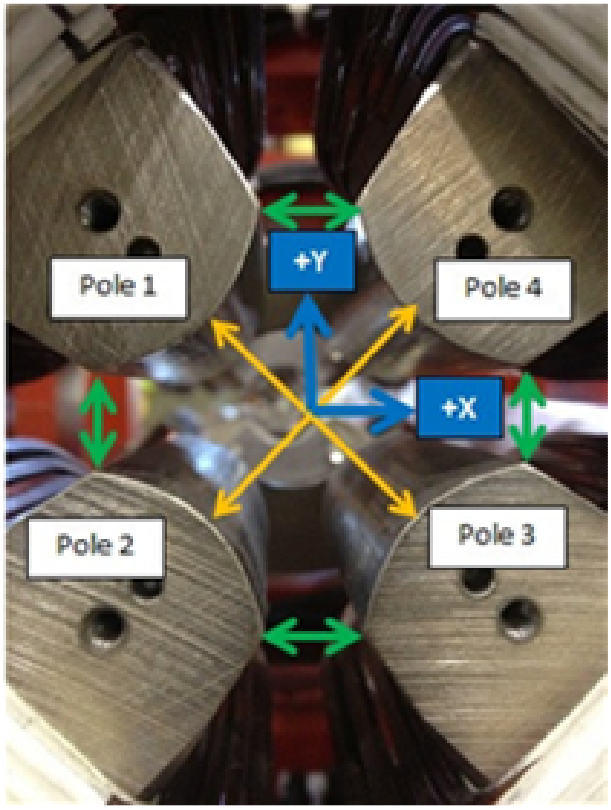
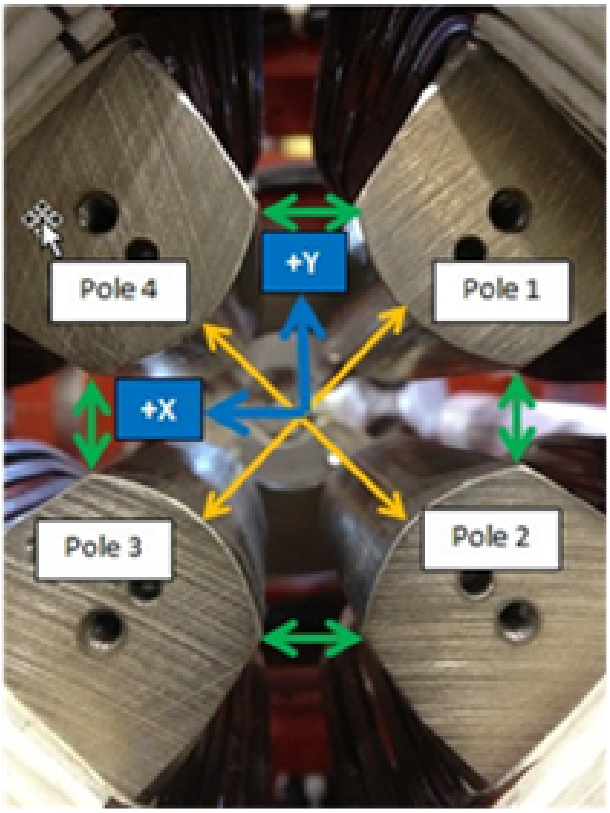
Pole Tip Gap Measurements

Pole Tips looking Downstream



Pole Tips looking Upstream



	Nominal Distance	Downstream Pole Ends	Upstream Pole Ends
Pole Tip Distance 1-3	1.260	1.25994	1.26037
Pole Tip Distance 2-4	1.260	1.26013	1.26
Gap 1-2	.422	0.4244	0.42357
Gap 2-3	.422	0.42317	0.42394
Gap 3-4	.422	0.4238	0.42417
Gap 4-1	.422	0.41747	0.41884

Dimensions in Inch

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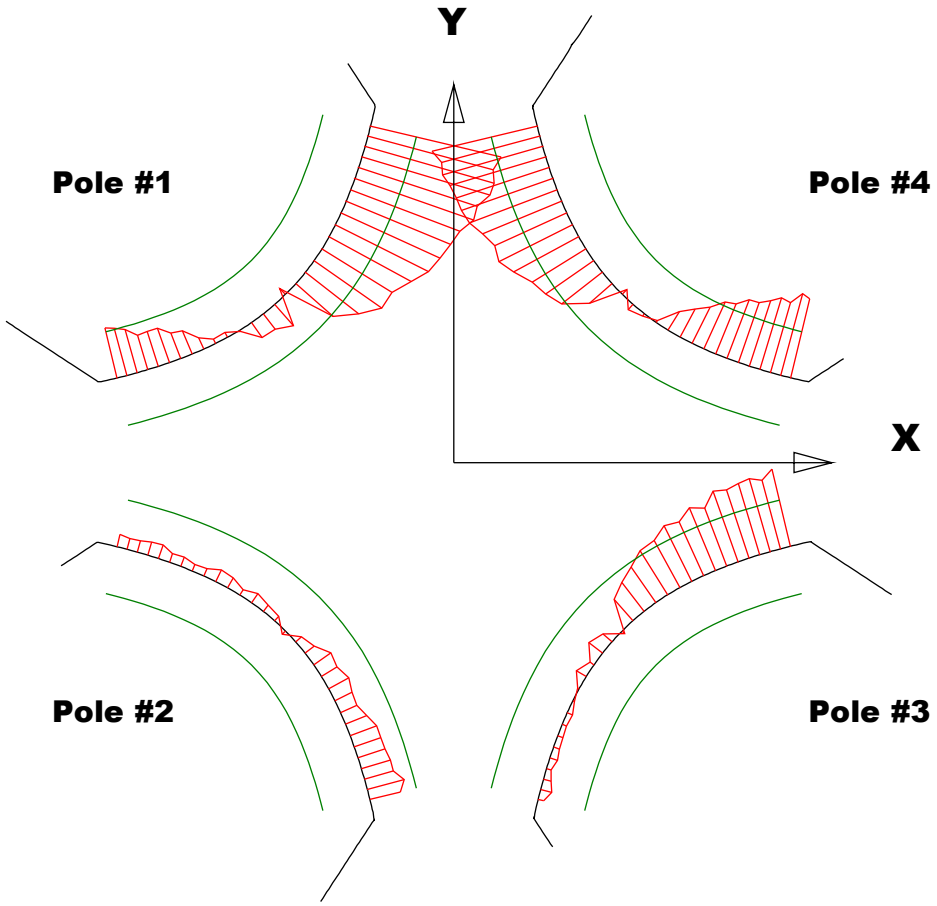
Composite Best-fit of Pole Tips, Downstream



Black = Nominal Pole Tip
Red = Pole Tip Deviations
Green = +/- .001 Tolerance

Dimensions in Inch

Pole Tip Deviations

Pole Tip	#1	#2	#3	#4
Min. Dev.	-0.00108	-0.0001	-0.00024	-0.00177
Max. Dev.	0.00282	0.0008	0.00167	0.00227

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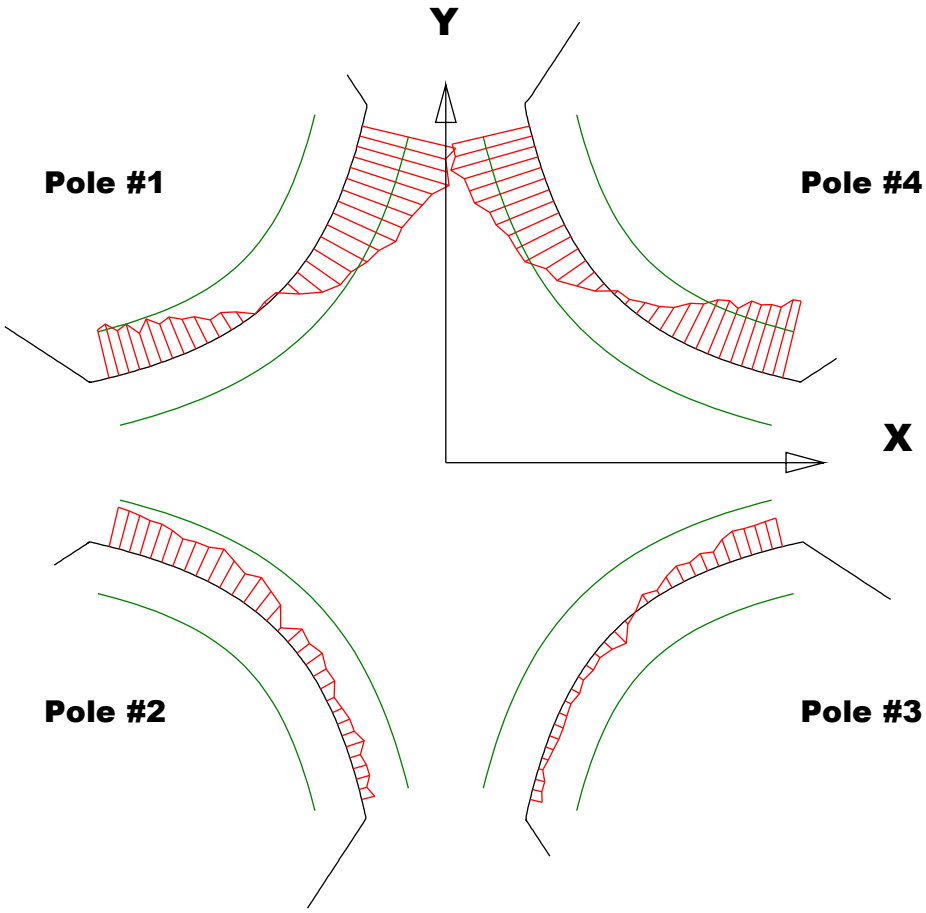
Composite Best-fit of Pole Tips, Upstream



Black = Nominal Pole Tip
Red = Pole Tip Deviations
Green = +/- .001 Tolerance

Dimensions in Inch

Pole Tip Deviations

Pole Tip	#1	#2	#3	#4
Min. Dev.	-0.00111	0.00009	-0.00036	-0.00166
Max. Dev.	0.00209	0.00085	0.00061	0.00183

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