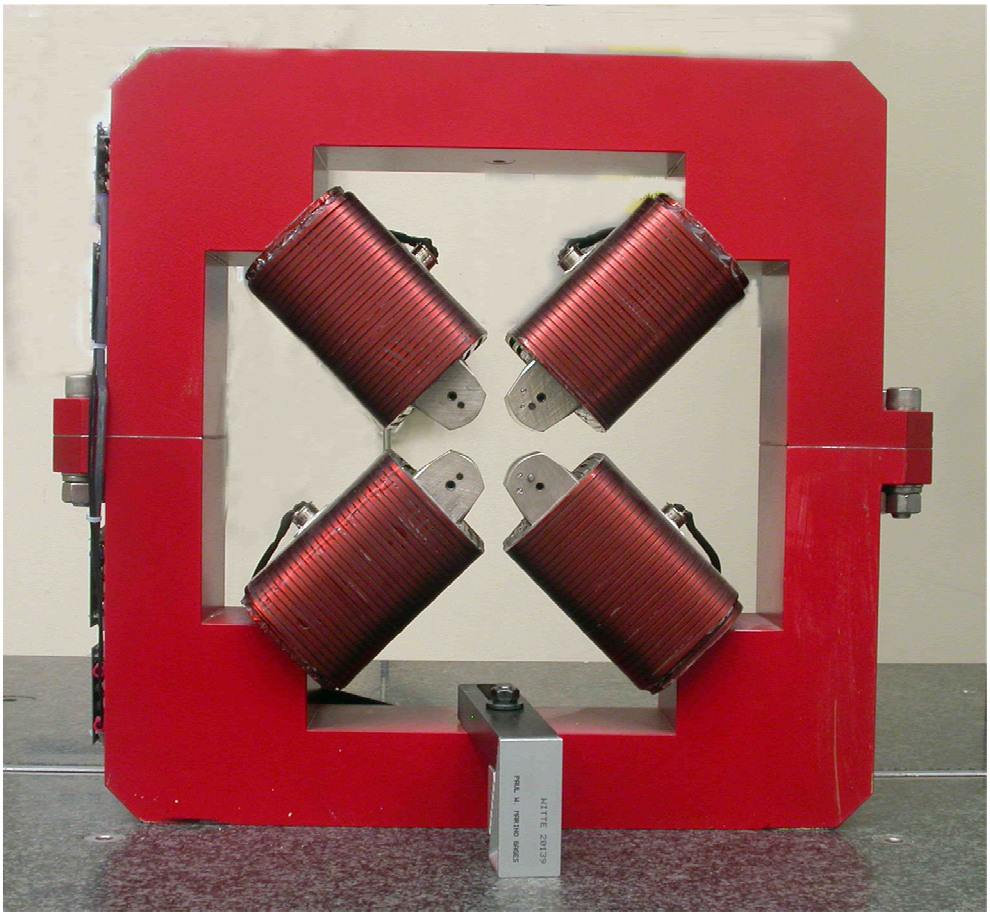
SLAC
NATIONAL ACCELERATOR LABORATORY

LCLS-II

LCLS II Injector Quadrupole Fiducialization Report



Barcode # : ' 002739

Beamline Name: QE03B

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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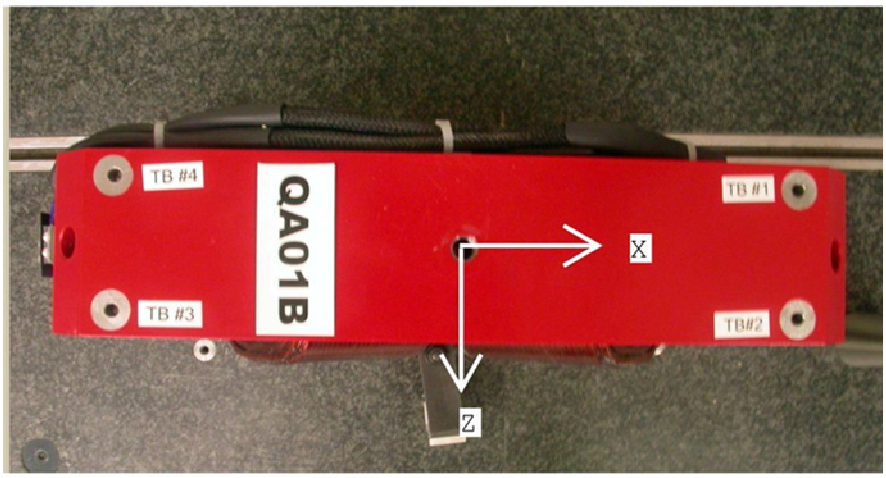
Tooling Ball Locations



Tooling Ball Locations

Tooling Ball	X Coord.	Y Coord.	Z Coord.
Ball #1	6.49360	8.88352	-1.25286
Ball #2	6.49475	8.88405	1.24775
Ball #3	-6.50603	8.87713	1.24678
Ball #4	-6.50599	8.87692	-1.25393

Tooling Ball Locations are 1 inch above unpainted surface pads

Dimensions in Inch

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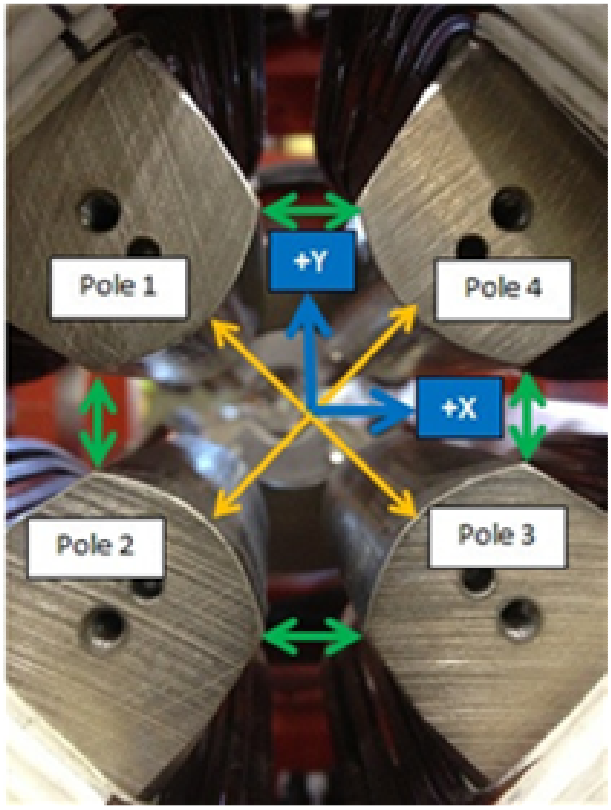
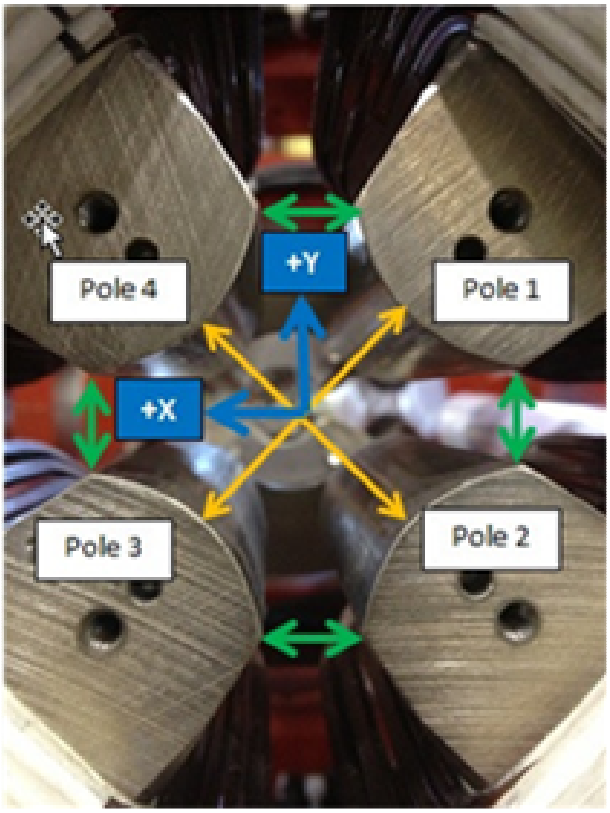
Pole Tip Gap Measurements

Pole Tips looking Downstream



Pole Tips looking Upstream



	Nominal Distance	Downstream Pole Ends	Upstream Pole Ends
Pole Tip Distance 1-3	1.260	1.26077	1.26067
Pole Tip Distance 2-4	1.260	1.26124	1.25989
Gap 1-2	.422	0.42975	0.42943
Gap 2-3	.422	0.419	0.41855
Gap 3-4	.422	0.42468	0.42447
Gap 4-1	.422	0.41804	0.41785

Dimensions in Inch

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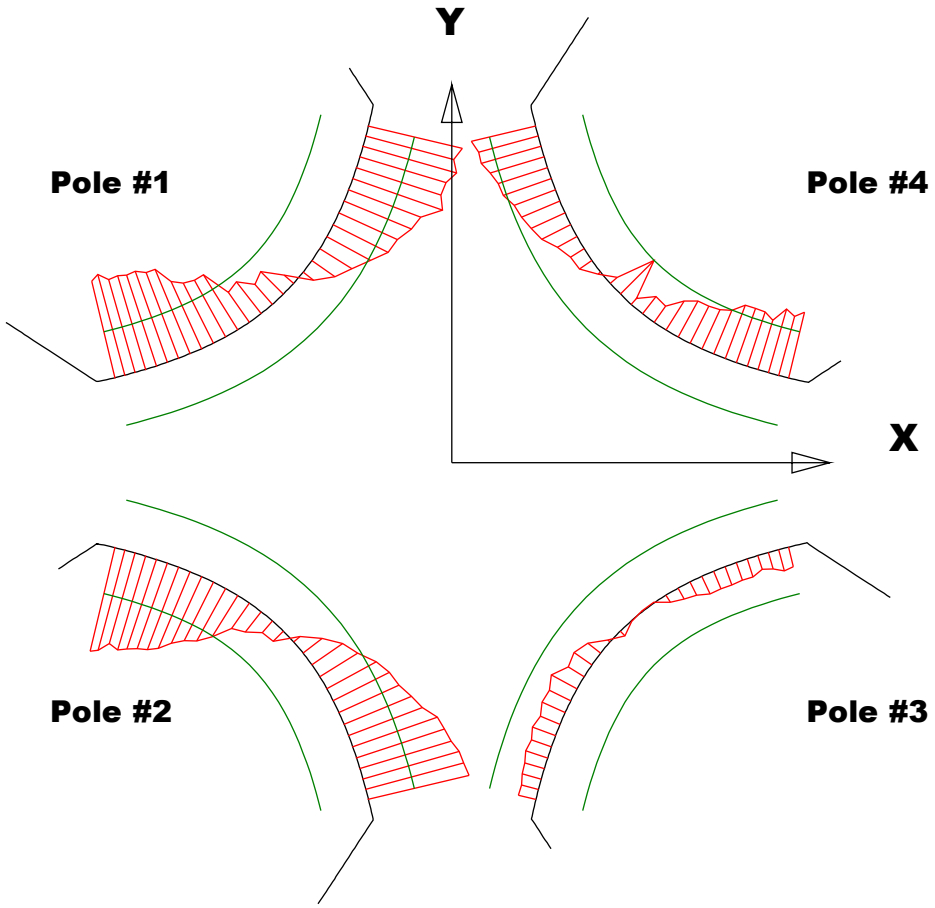
Composite Best-fit of Pole Tips, Downstream



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.	-0.00219	-0.00223	-0.00046	-0.00142
Max. Dev.	0.00205	0.00217	0.00062	0.00139

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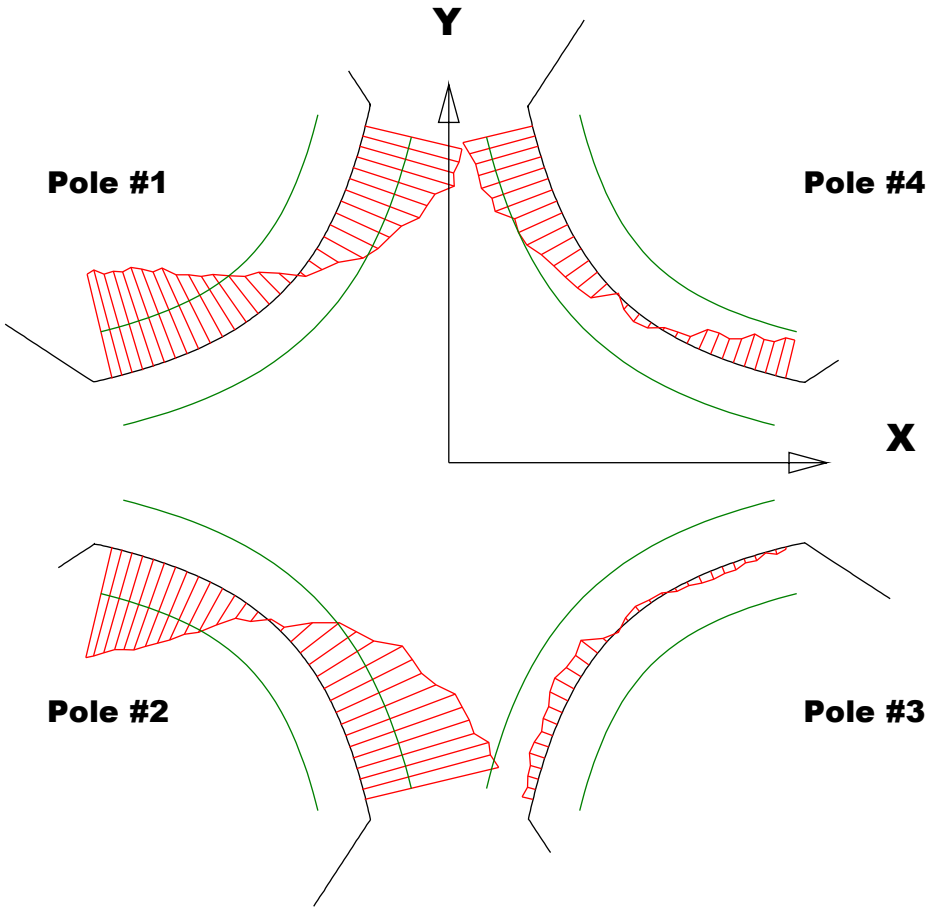
Composite Best-fit of Pole Tips, Upstream



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.	-0.00228	-0.00237	-0.00018	-0.00082
Max. Dev.	0.00213	0.00287	0.00046	0.0015

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