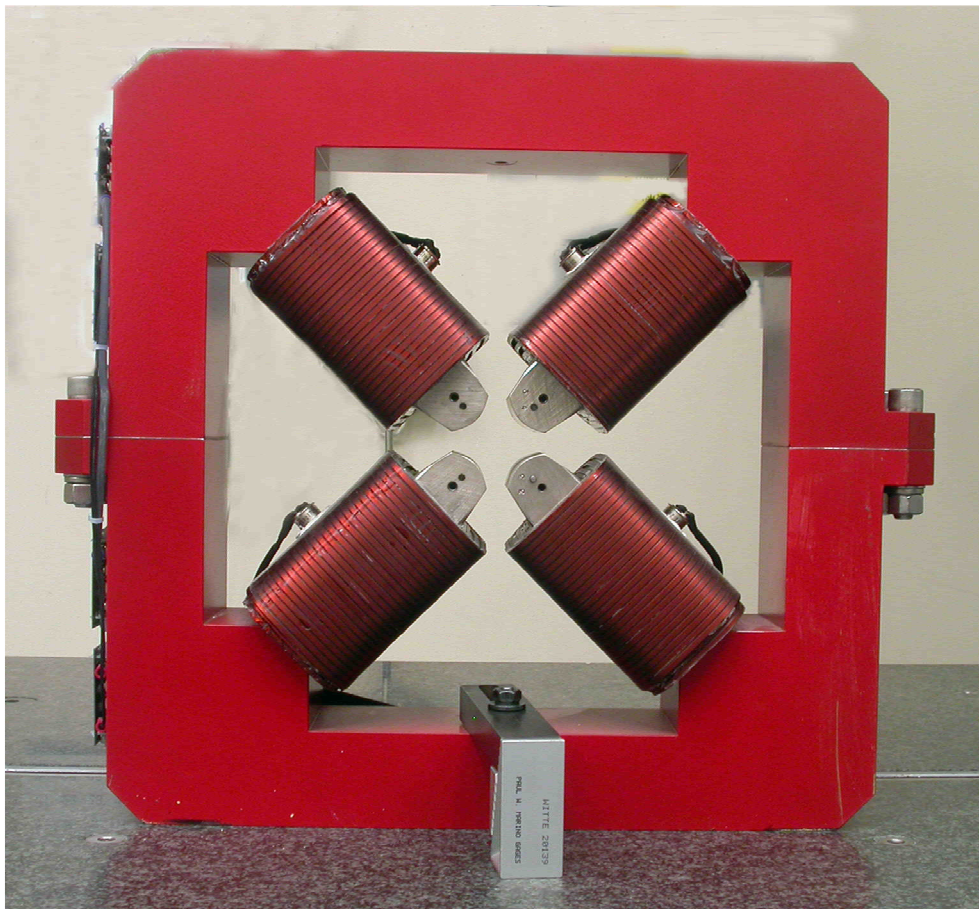


LCLS II Injector Quadrupole Fiducialization Report



Barcode # : 002736
Beamline Name: QA02B

Coordinate System Setup

Spatial Alignment

The Spatial 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 alignment of the magnet and defines the Z axis.

Planar Alignment

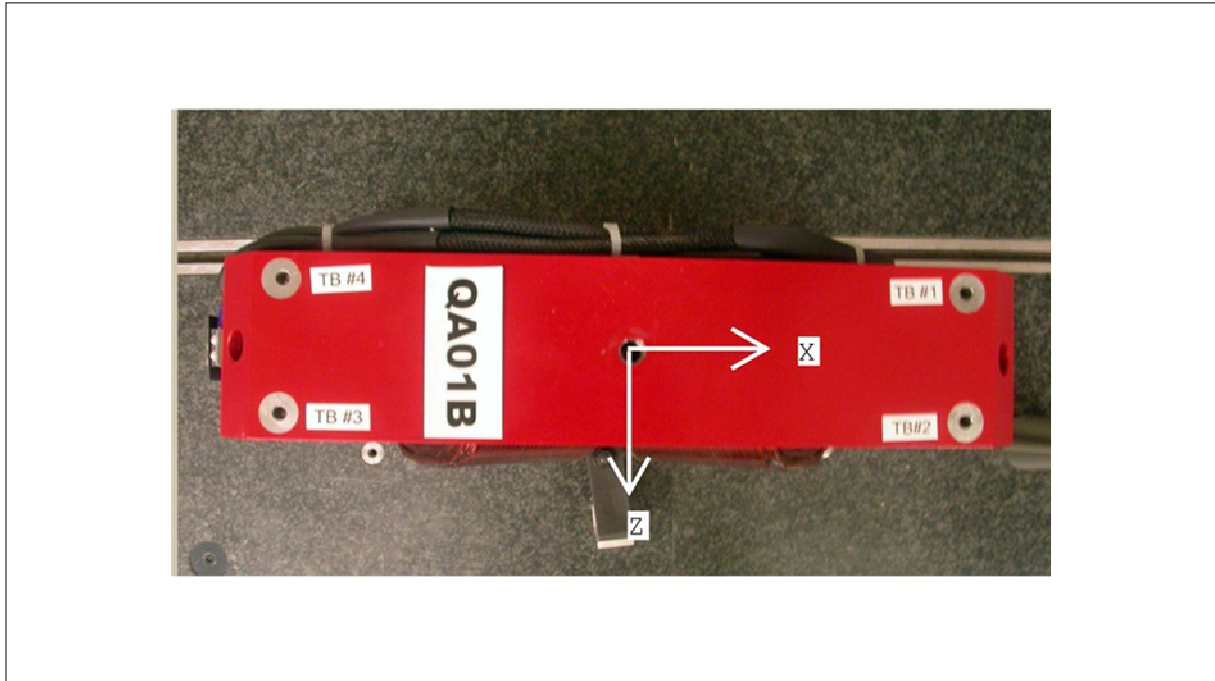
The Planar Alignment of the magnet is created by averaging the rotations of the composite best-fits of the upstream pole tips and downstream pole tips. This direction defines the Y and X directions of the magnet.

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 axis.

Barcode # : 002736
Beamline Name: QA02B

Tooling Ball Locations



Tooling Ball Locations

Tooling Ball	X Coord.	Y Coord.	Z Coord.
Ball #1	6.50069	8.87844	-1.25018
Ball #2	6.50199	8.87997	1.24960
Ball #3	-6.49846	8.88193	1.25117
Ball #4	-6.49838	8.88088	-1.24844

Tooling Ball Locations are 1 inch above unpainted surface pads

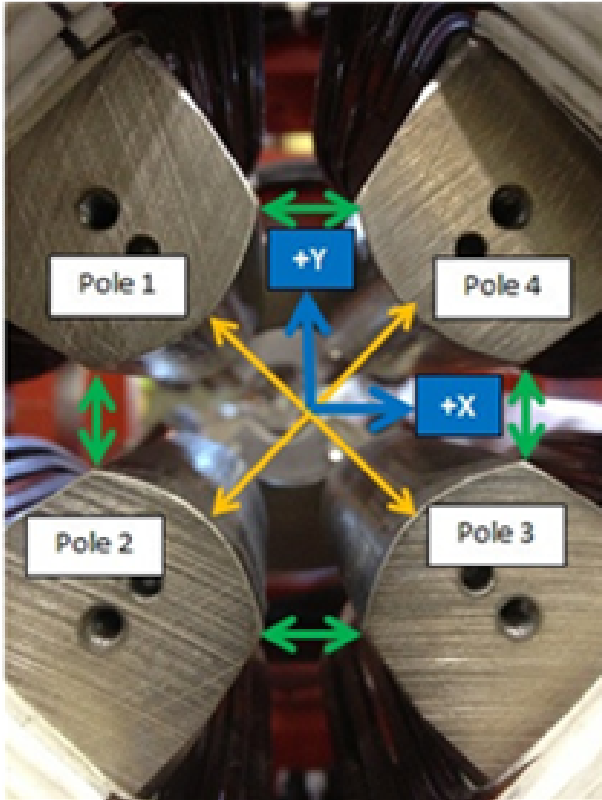
Dimensions in Inch

Barcode # : 002736

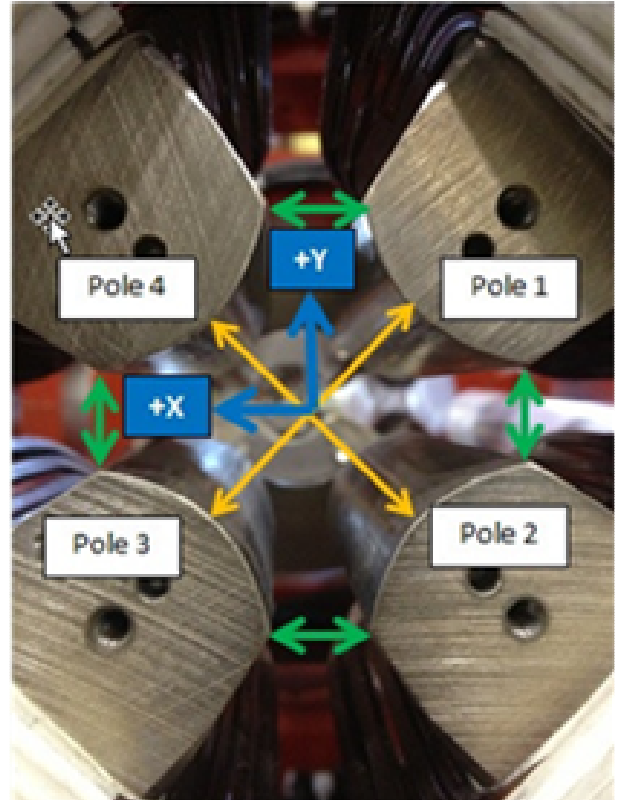
Beamline Name: QA02B

Pole Tip Gap Measurements

Pole Tips looking Downstream



Pole Tips looking Upstream

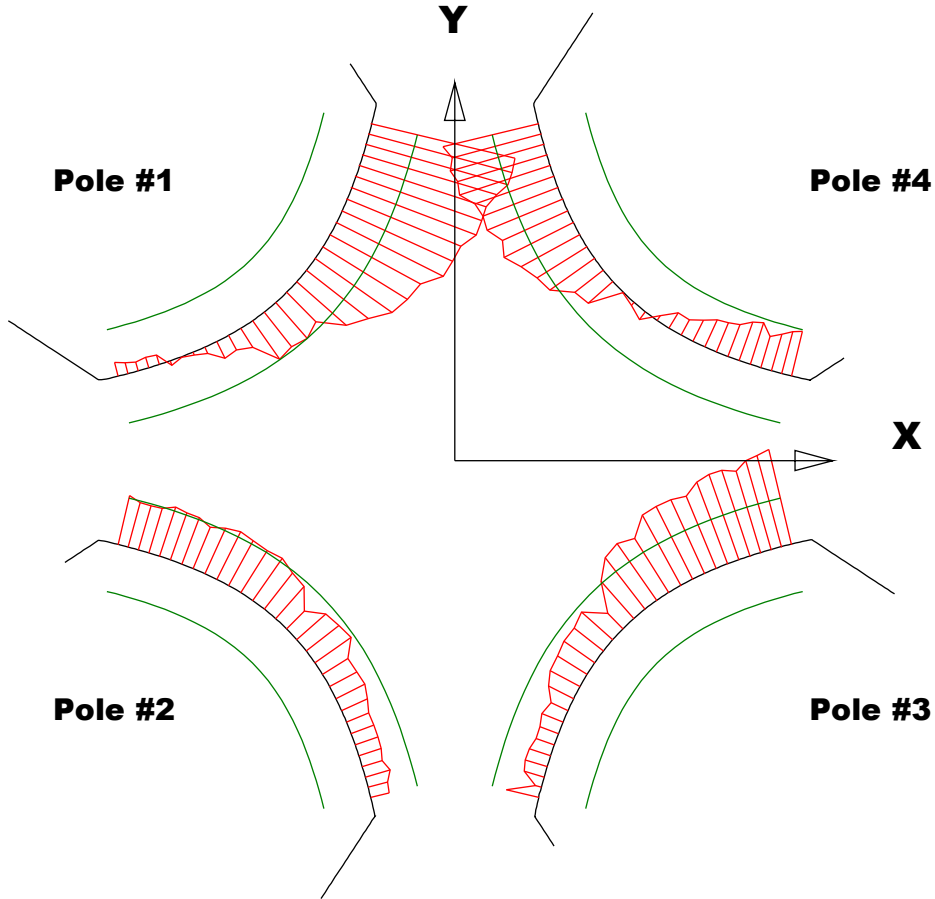


	Nominal Distance	Downstream Pole Ends	Upstream Pole Ends
Pole Tip Distance 1-3	1.260	1.25858	1.25917
Pole Tip Distance 2-4	1.260	1.25941	1.25955
Gap 1-2	.422	0.42431	0.42509
Gap 2-3	.422	0.42295	0.42292
Gap 3-4	.422	0.42232	0.42139
Gap 4-1	.422	0.41691	0.41691

Dimensions in Inch

Barcode # : 002736
Beamline Name: QA02B

Composite Best-fit of Pole Tips, Downstream



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

Dimensions in Inch

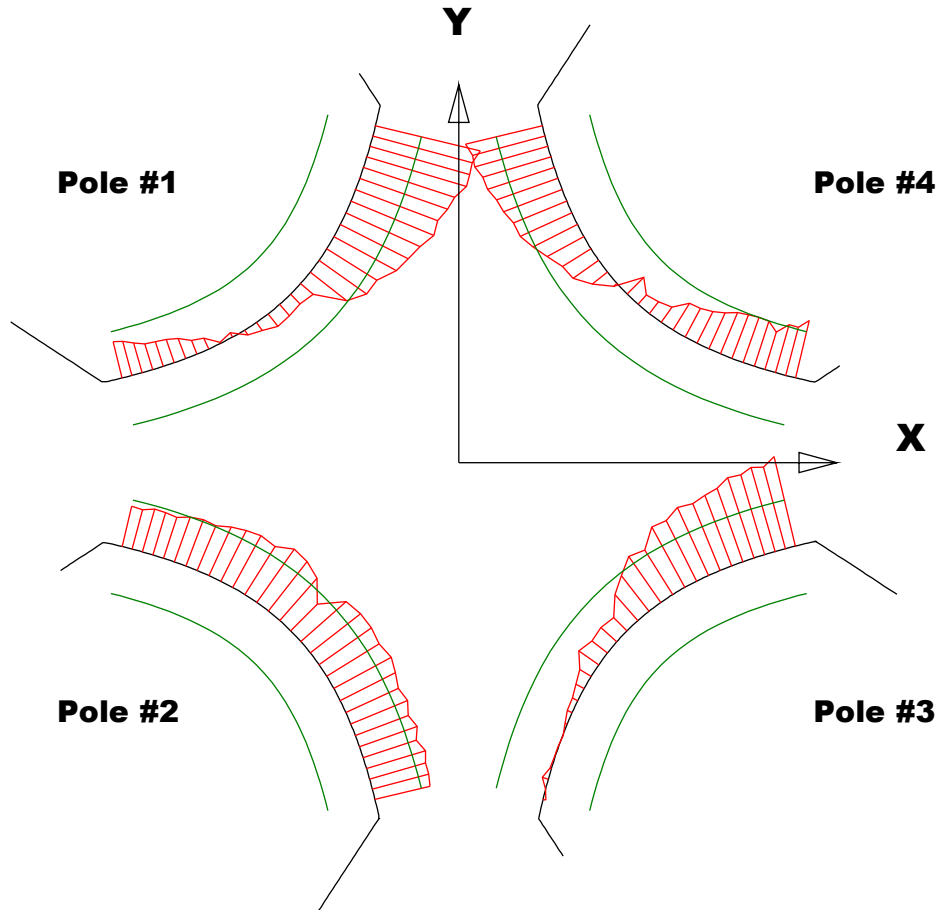
Pole Tip Deviations

Pole Tip	#1	#2	#3	#4
Min. Dev.	-0.0003	0.0004	0.00013	-0.00096
Max. Dev.	0.00311	0.00112	0.00204	0.00206

Barcode # : 002736

Beamline Name: QA02B

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.	-0.00078	0.00079	-0.00006	-0.00124
Max. Dev.	0.00226	0.00137	0.00193	0.00166

Barcode # : 002736

Beamline Name: QA02B