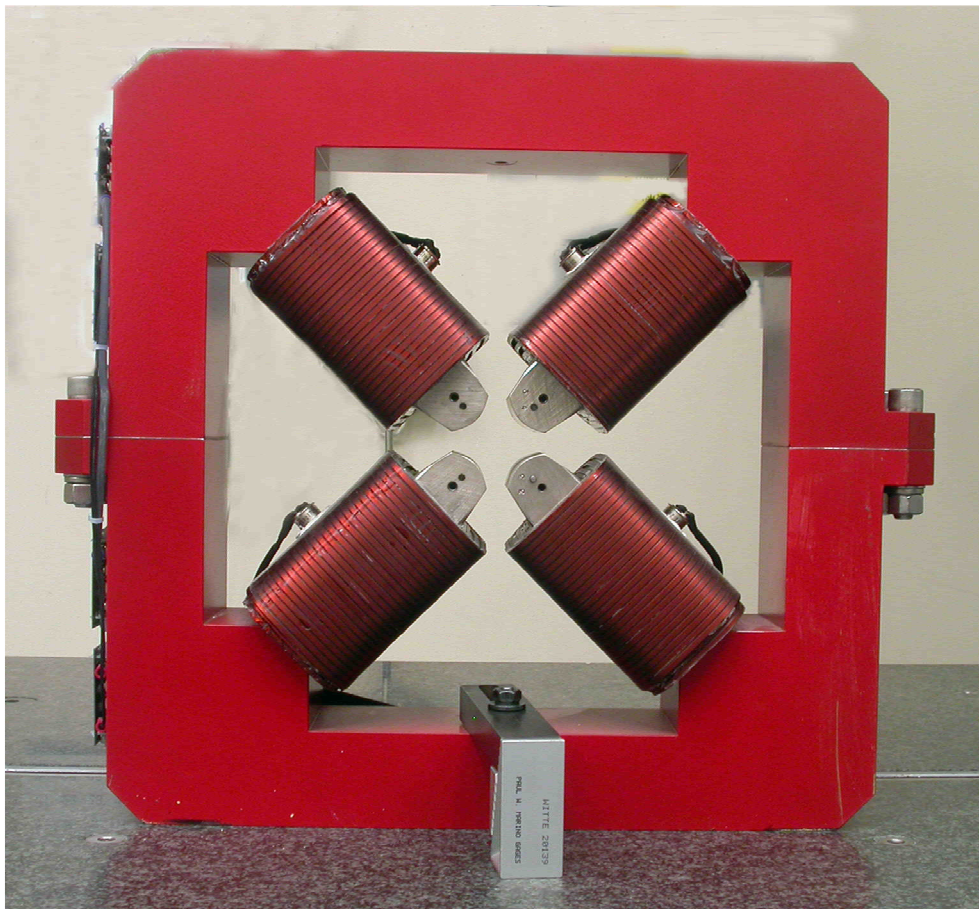


LCLS II Injector Quadrupole Fiducialization Report



Barcode # : 002736
Beamline Name: QM02B

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

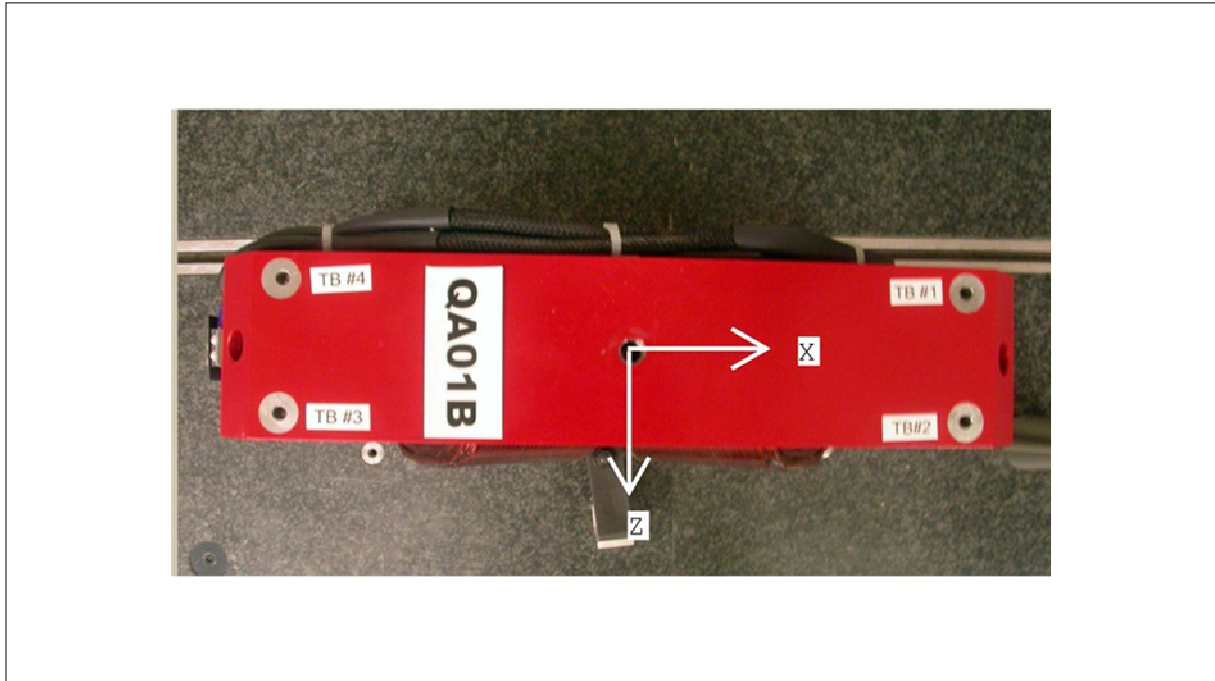
The Planar Alignment of the magnet is created by averaging the rotations of the composite best-fits of the upstream pole tips and downstream pole tips. This direction defines the Y and X directions of the magnet.

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: QM02B

Tooling Ball Locations



Tooling Ball Locations

Tooling Ball	X Coord.	Y Coord.	Z Coord.
Ball #1	6.49899	8.88225	-1.25265
Ball #2	6.49849	8.88524	1.24650
Ball #3	-6.50117	8.88236	1.24791
Ball #4	-6.50027	8.88036	-1.25210

Tooling Ball Locations are 1 inch above unpainted surface pads

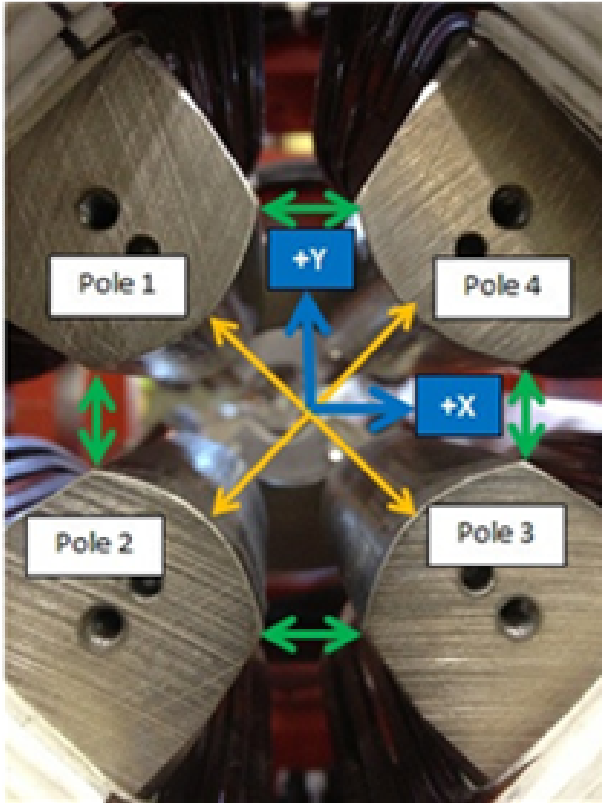
Dimensions in Inch

Barcode # : 002736

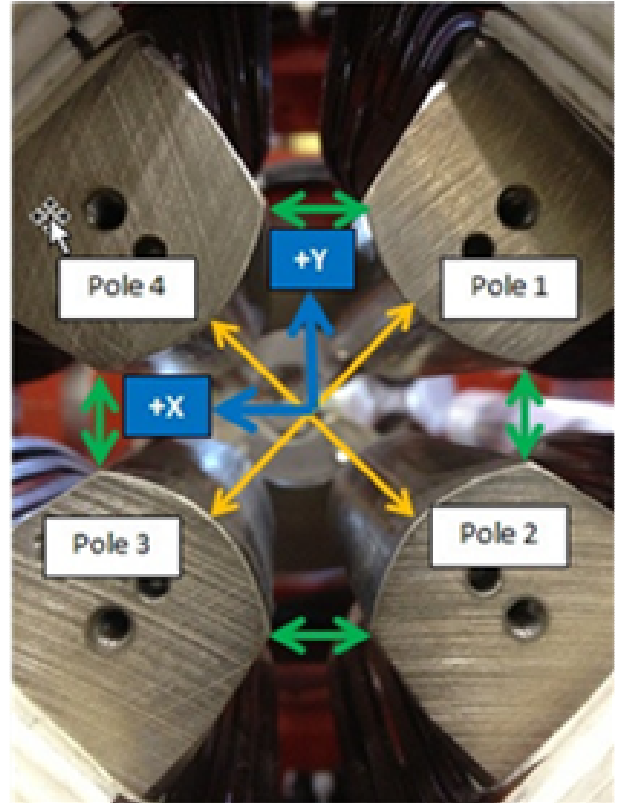
Beamline Name: QM02B

Pole Tip Gap Measurements

Pole Tips looking Downstream



Pole Tips looking Upstream

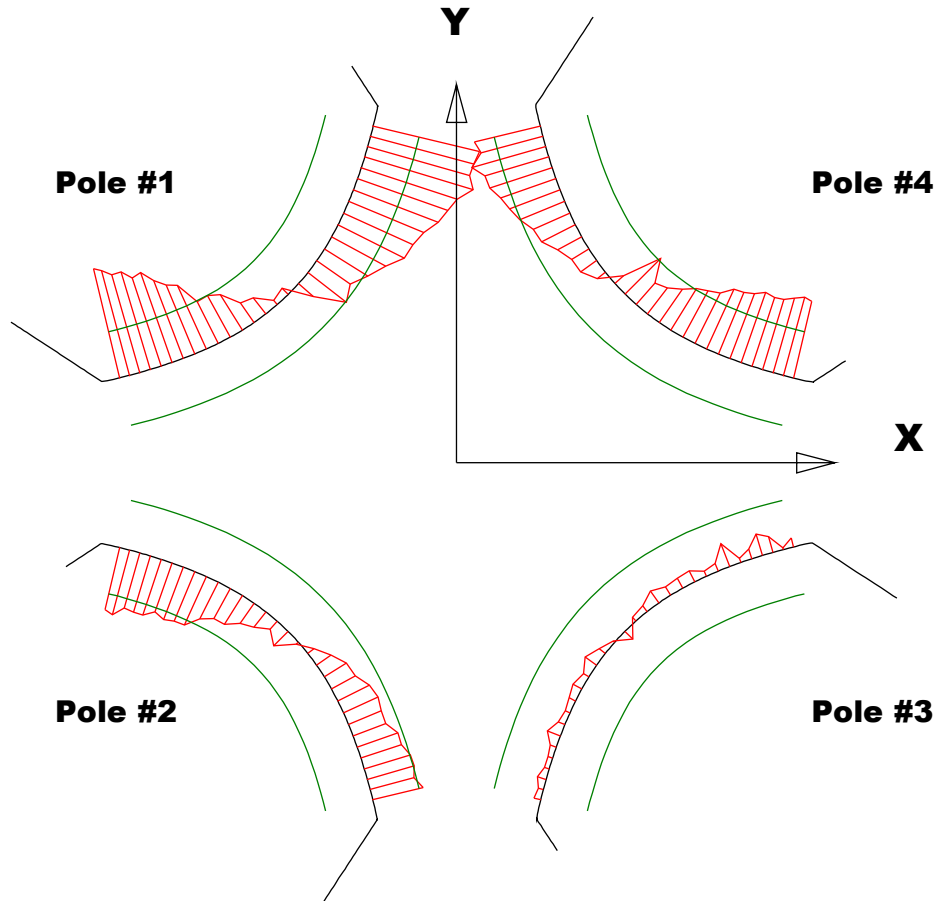


	Nominal Distance	Downstream Pole Ends	Upstream Pole Ends
Pole Tip Distance 1-3	1.260	1.2604	1.26023
Pole Tip Distance 2-4	1.260	1.26143	1.26027
Gap 1-2	.422	0.42894	0.42827
Gap 2-3	.422	0.42253	0.42214
Gap 3-4	.422	0.42596	0.42625
Gap 4-1	.422	0.41856	0.41948

Dimensions in Inch

Barcode # : 002736
Beamline Name: QM02B

Composite Best-fit of Pole Tips, Downstream



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

Dimensions in Inch

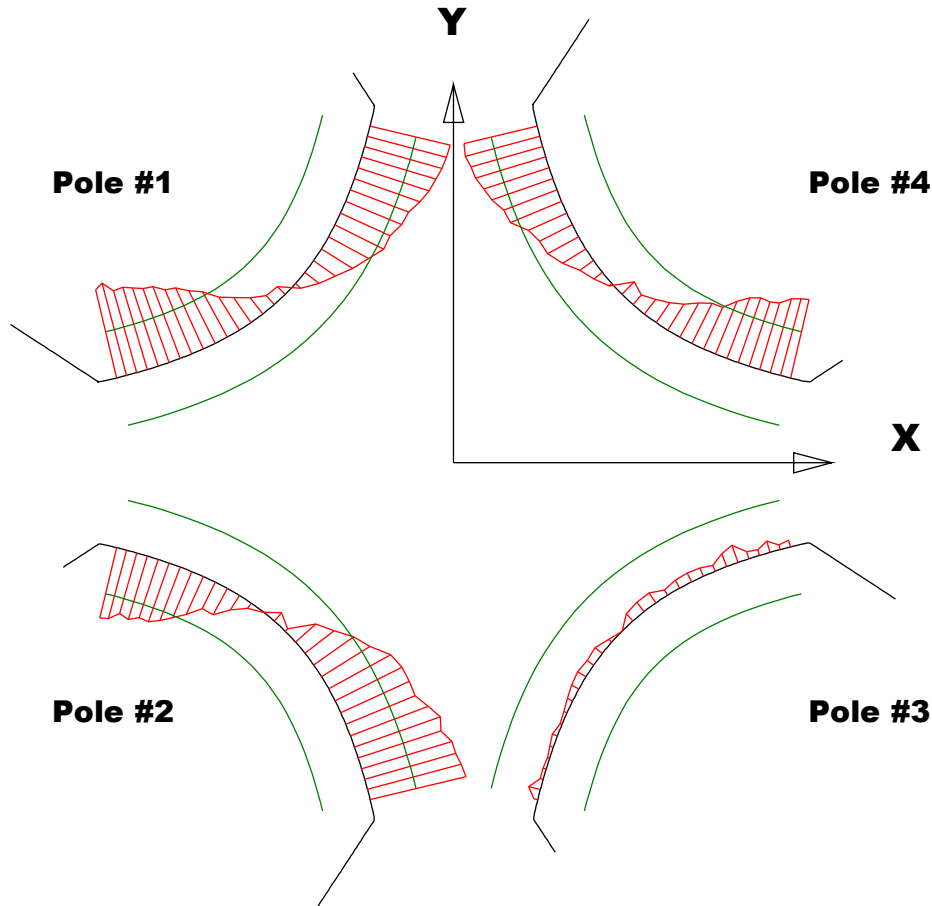
Pole Tip Deviations

Pole Tip	#1	#2	#3	#4
Min. Dev.	-0.00236	-0.0014	-0.00023	-0.0017
Max. Dev.	0.00237	0.00109	0.00052	0.00161

Barcode # : 002736

Beamline Name: QM02B

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.	-0.002	-0.00152	0	-0.00169
Max. Dev.	0.00173	0.00207	0.00038	0.00162

Barcode # : 002736

Beamline Name: QM02B