LCLS II 1.085Q4.31 Fiducialization Report

Inspector : K. Caban
Engineer : A. Ibrahimov
Drawing No. : SA-902-675-01
Barcode # : 4248
Mfg. S/N : E019

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 0.100 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 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.

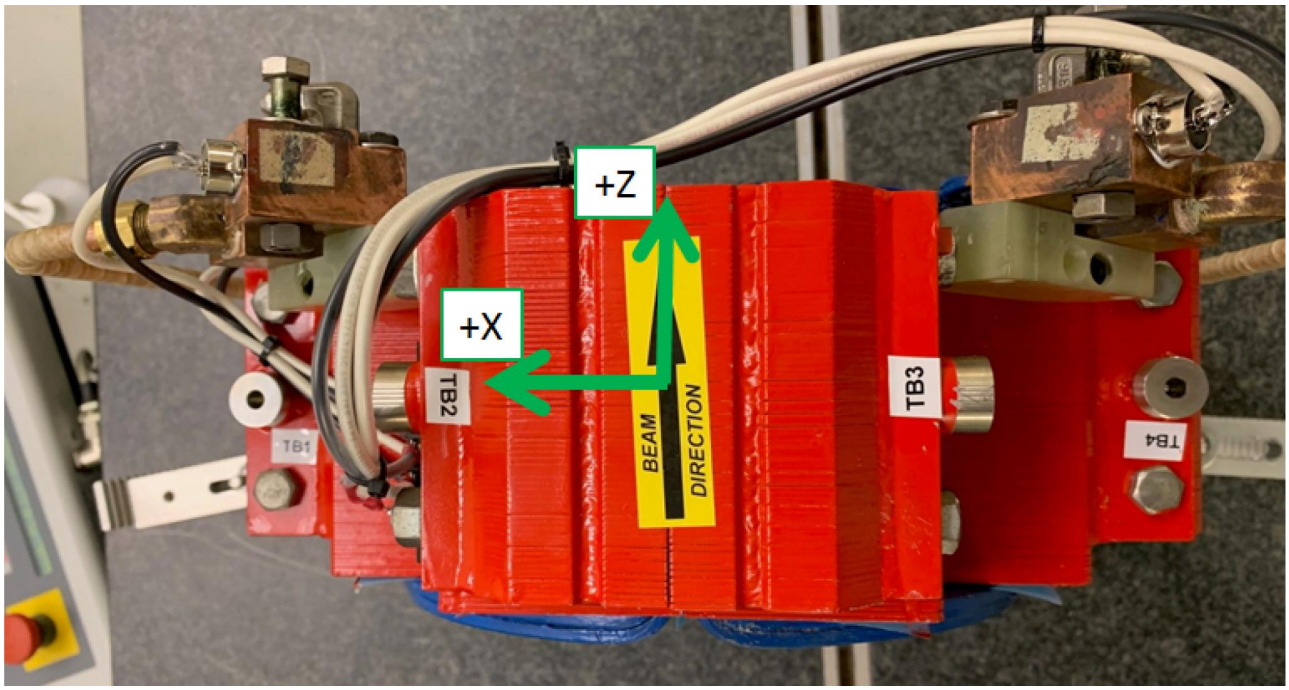
Coordinate Origins

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 axis.

Barcode # : 4248

Mfg. S/N : E019

Tooling Ball Locations



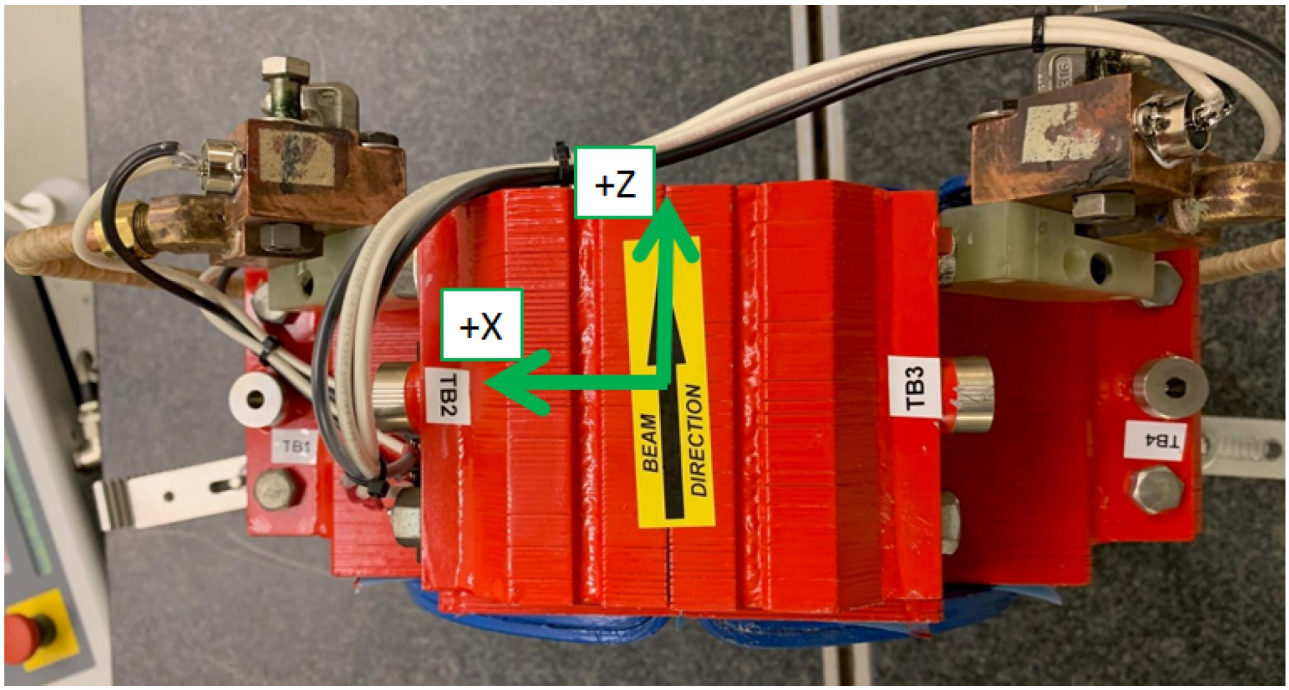
Tooling Ball	X Coord.	Y Coord.	Z Coord.
TB 1	5.8311	4.0075	0.1891
TB 2	3.9958	5.8471	0.1854
TB 3	-4.0071	5.8363	0.1716
TB 4	-5.8418	3.9973	0.2071

Tooling Ball Locations are 1 inch above Tooling Ball Adapter Plane
Dimensions in Inch

Barcode # : 4248

Mfg. S/N : E019

Tooling Ball Locations



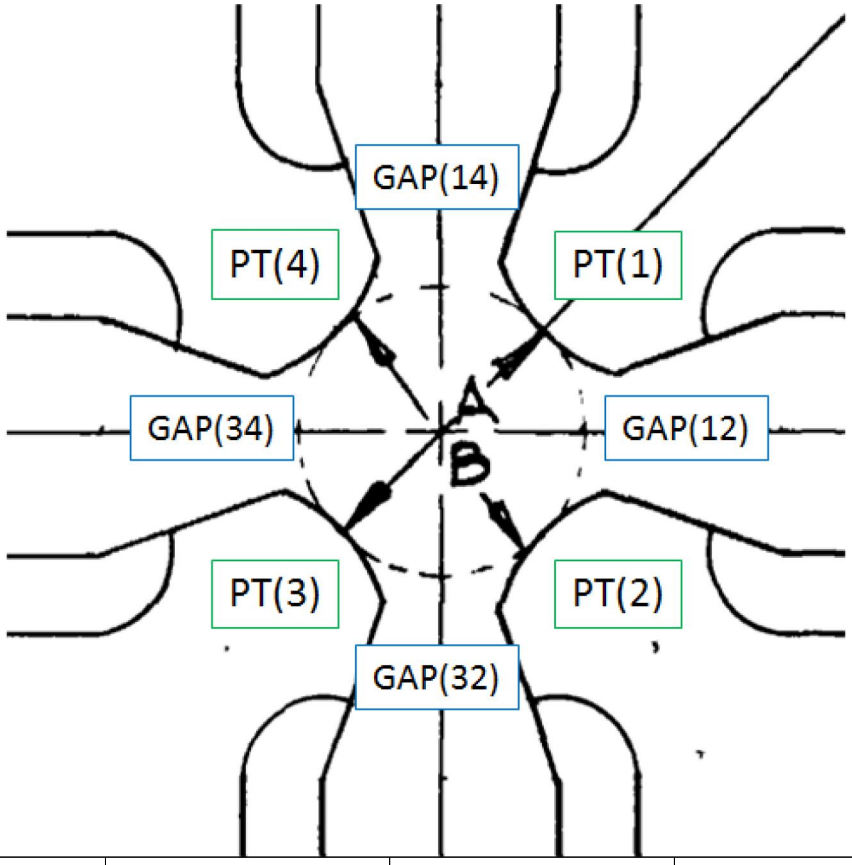
Tooling Ball	X Coord.	Y Coord.	Z Coord.
TB 1	5.8296	3.3204	0.1911
TB 2	3.3091	5.8451	0.1843
TB 3	-3.3190	5.8359	0.1652
TB 4	-5.8387	3.3097	0.2066

Tooling Ball Locations are 5/16 inch above Tooling Ball Adapter Plane
Dimensions in Inch

Barcode # : 4248

Mfg. S/N : E019

Pole Tip Gap Measurements



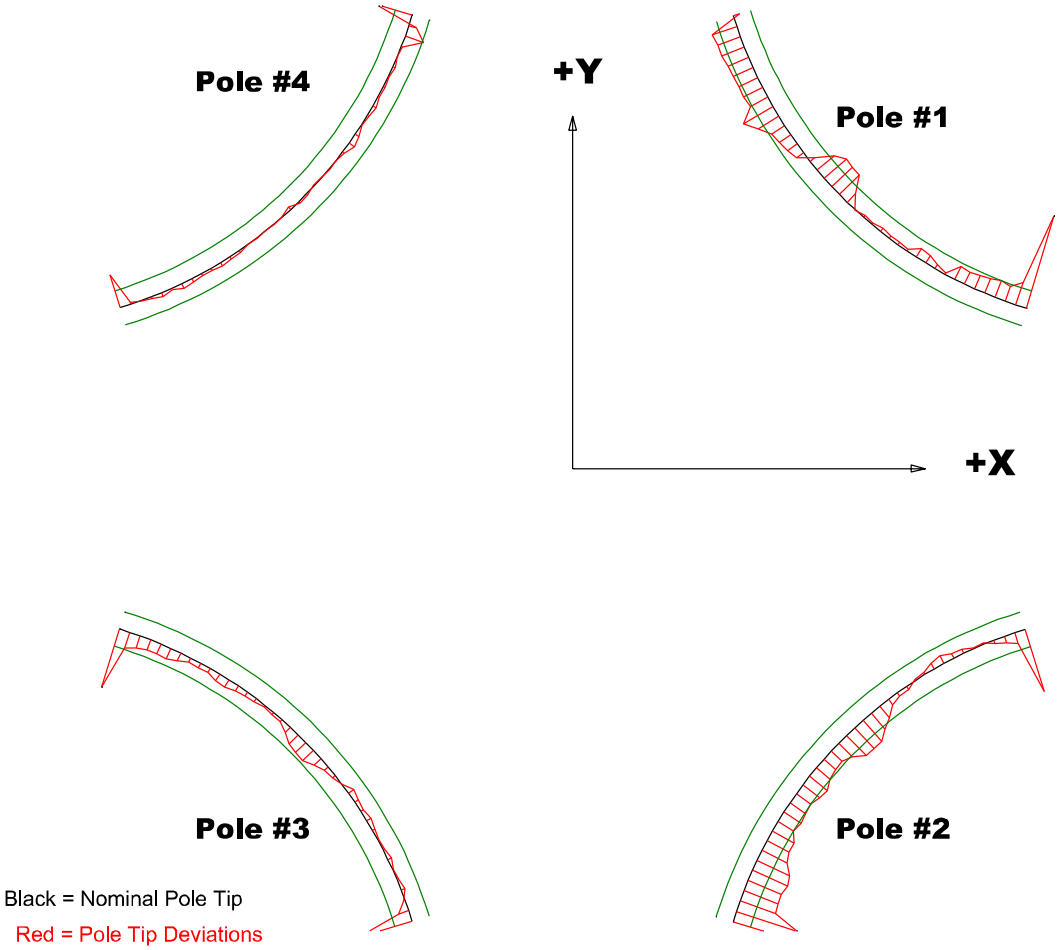
	Nominal Distance	Downstream Pole End	Upstream Pole End
PT Distance 1-3(A)	1.085	1.08636	1.08988
PT Distance 2-4(B)	1.085	1.08599	1.08923
Gap 1-2	0.4546	0.46393	0.4712
Gap 2-3	0.4546	0.46671	0.46472
Gap 3-4	0.4546	0.46086	0.46318
Gap 4-1	0.4546	0.45752	0.46281

Dimensions in Inch

Barcode # : 4248

Mfg. S/N : E019

Composite Best-fit of Pole Tips, Downstream



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

Dimensions in Inch

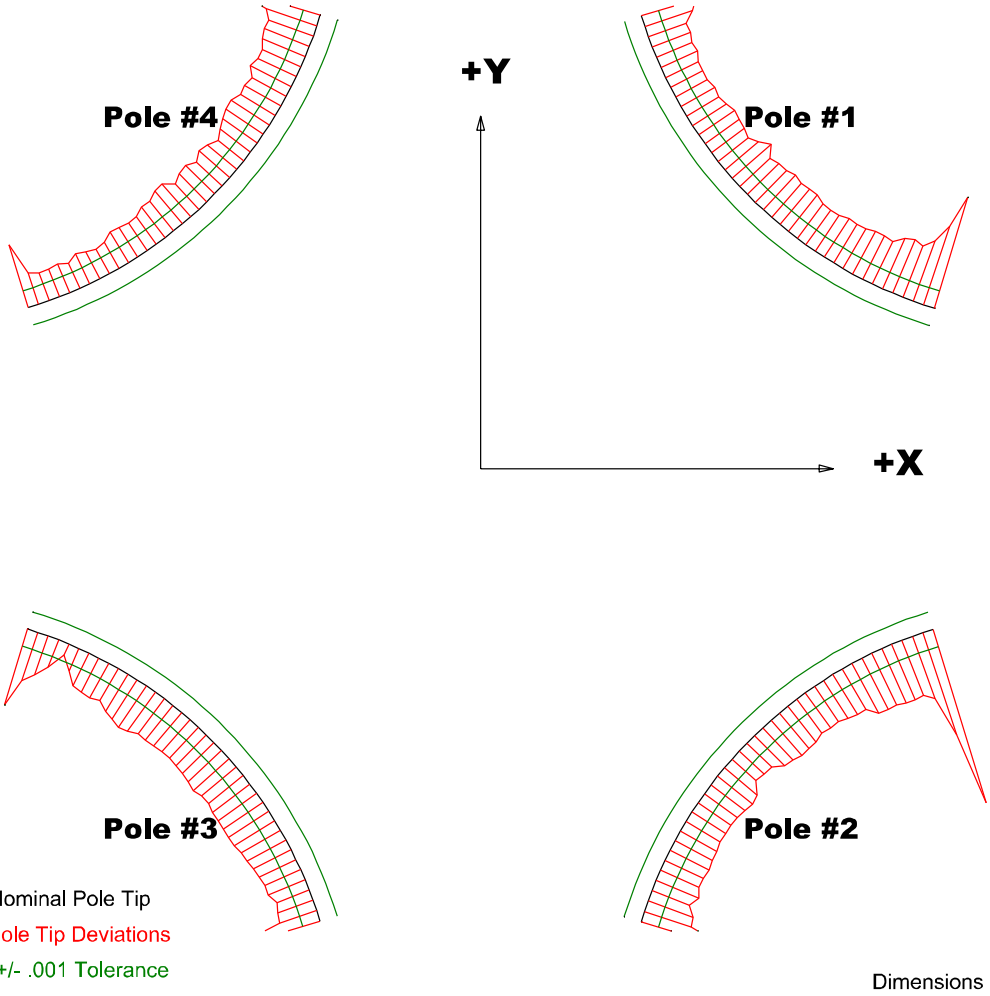
Pole Tip Deviations

Pole Tip	#1	#2	#3	#4
Min. Dev.	-0.00535	-0.0092	-0.00338	-0.0022
Max. Dev.	0.00189	0.00049	0.00037	0.00107

Barcode # : 4248

Mfg. S/N : E019

Composite Best-fit of Pole Tips, Upstream



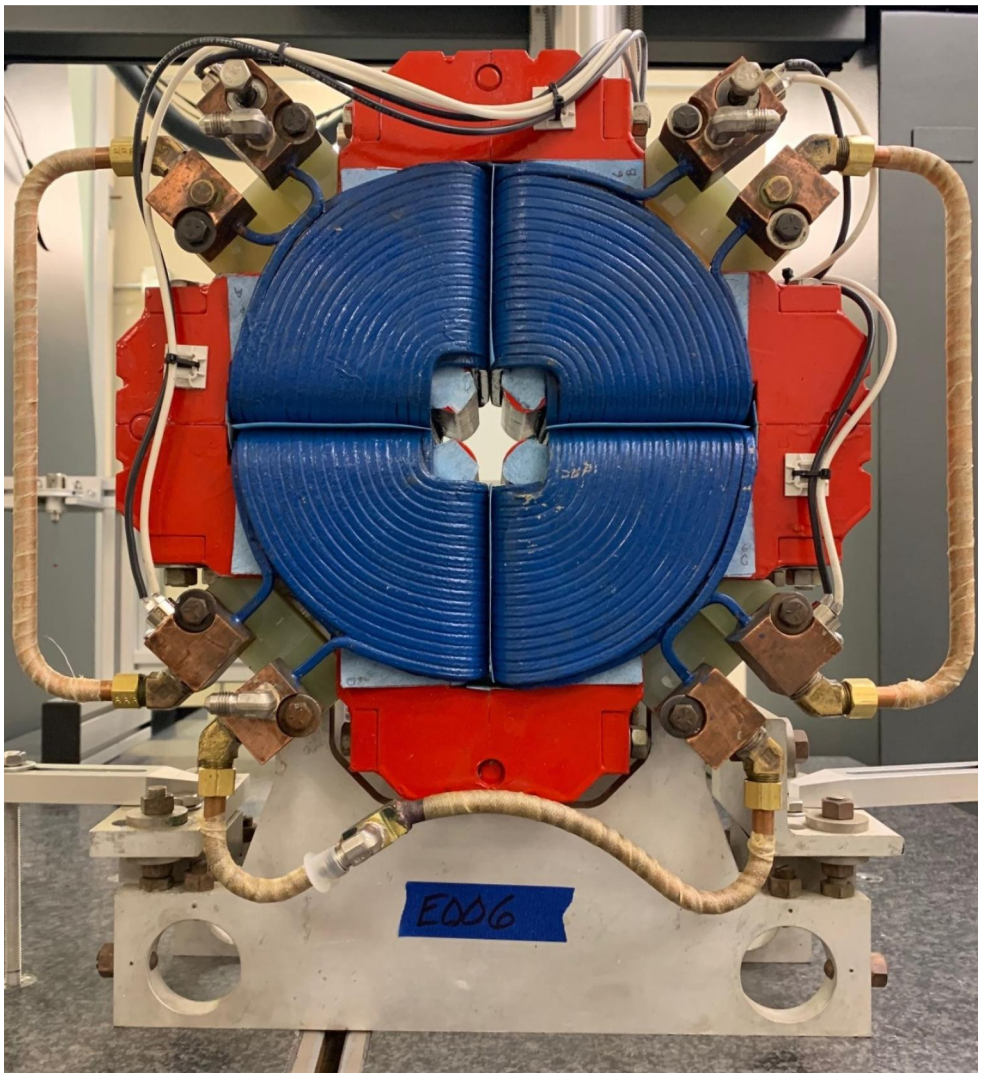
Pole Tip Deviations

Pole Tip	#1	#2	#3	#4
Min. Dev.	-0.00646	-0.01013	-0.00491	-0.00491
Max. Dev.	-0.00201	-0.00178	-0.00067	-0.00153

Barcode # : 4248

Mfg. S/N : E019

Angle of the Composite Pole Tip Best-Fit



Angle in Decimal Degrees ° :-0.00468

Angle in Milliradians :-0.08175

Barcode # : 4248

Mfg. S/N : E019