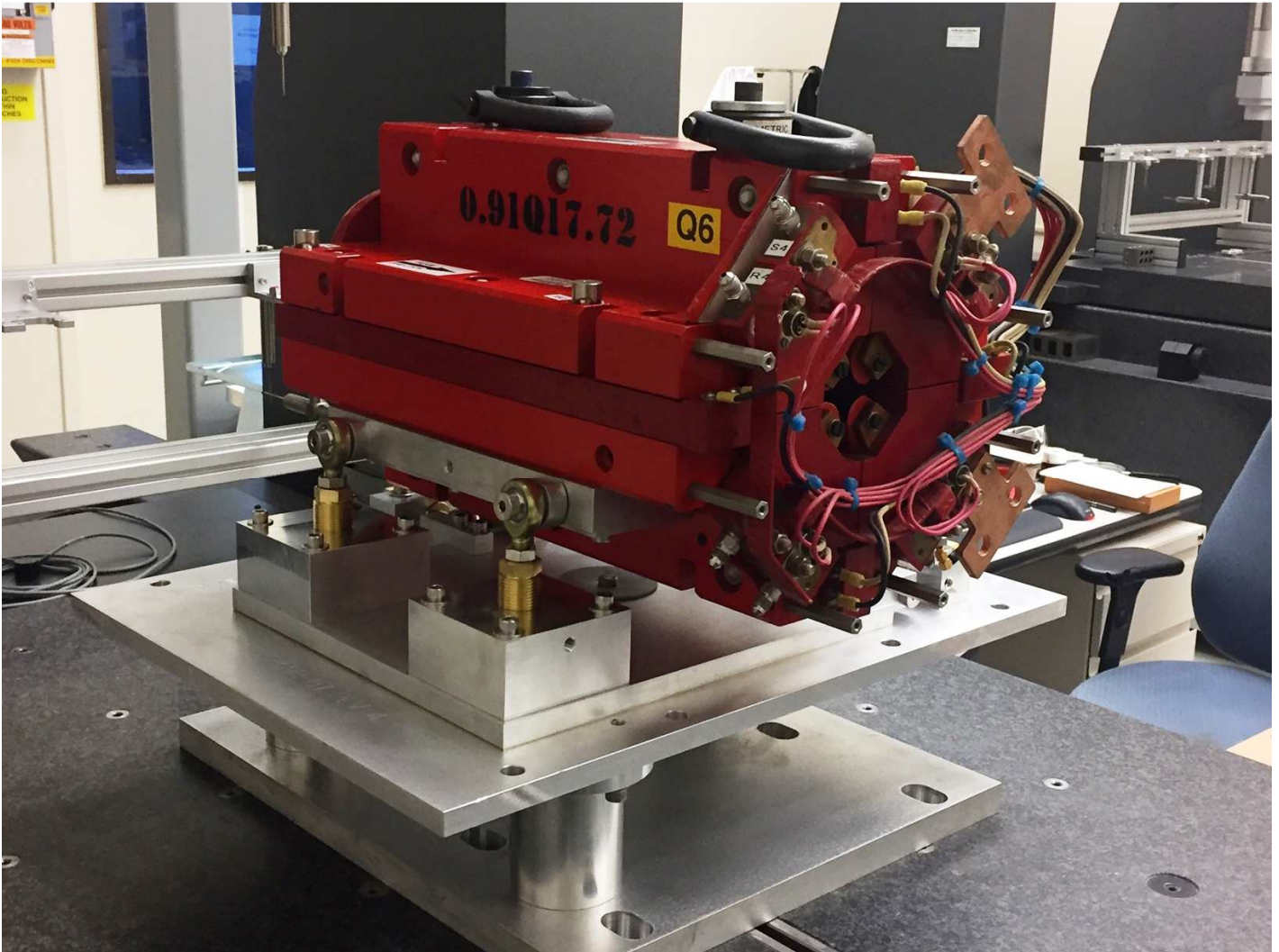


LCLS II 0.91Q17.72 Quadrupole Fiducialization Report



Inspector : K. Caban
Engineer : J. Amann/K. Grouev
Drawing No. : SA-380-301-00 R2
Barcode # : 4107
Mfg. S/N : Q6

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 .250 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.

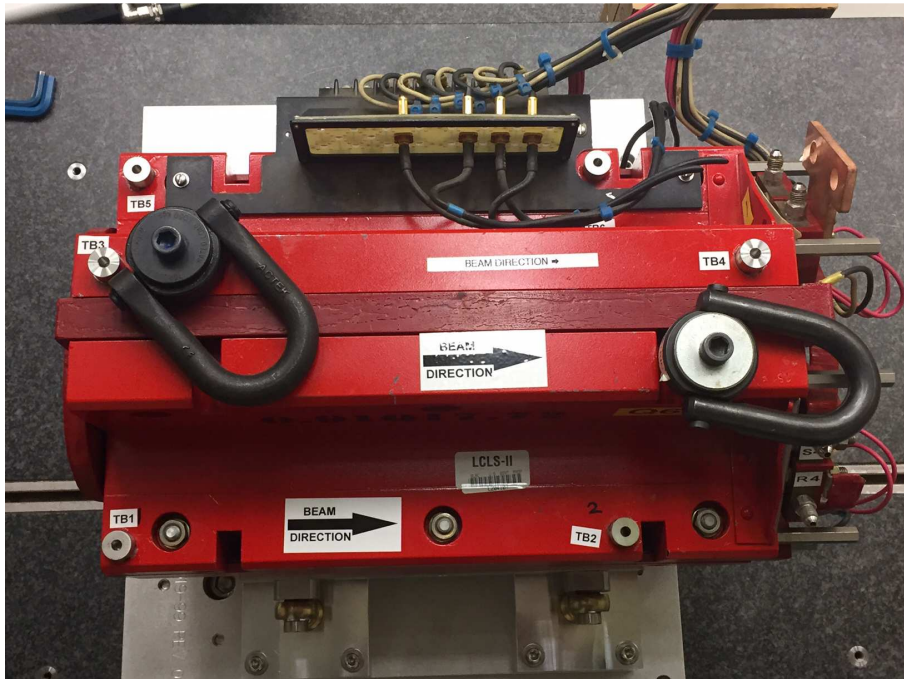
Coordinate Origins

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 # : 4107

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Tooling Ball Locations



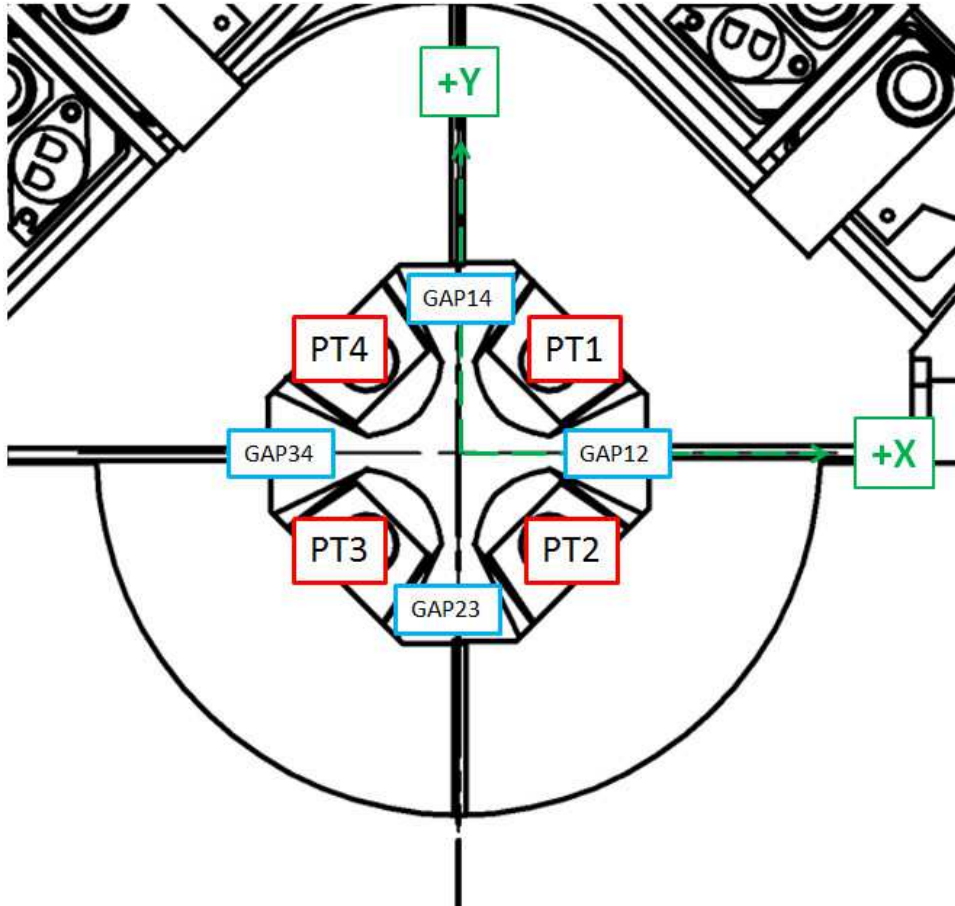
Tooling Ball	X Coord.	Y Coord.	Z Coord.
TB 1	-5.16918	3.67840	-8.31885
TB 2	-5.14114	3.68528	4.75249
TB 3	1.23619	7.30179	-7.98646
TB 4	1.21558	7.30422	7.68505
TB 5	5.04350	3.69111	-8.23097
TB 6	5.09732	3.69565	4.55567
TB A	-5.16505	2.99188	-8.31991
TB B	-5.13389	2.99816	4.74870
TB C	1.23961	6.61410	-7.98524
TB D	1.22049	6.61630	7.68501
TB E	5.04448	3.00339	-8.22774
TB F	5.10025	3.00711	4.55253

Tooling Ball Locations (1-6) are 1 inch above Tooling Ball Adapter Plane
 Tooling Ball Locations (A-F) are 5/16 inch above Tooling Ball Adapter Plane
 Dimensions in Inch

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Pole Tip Gap Measurements



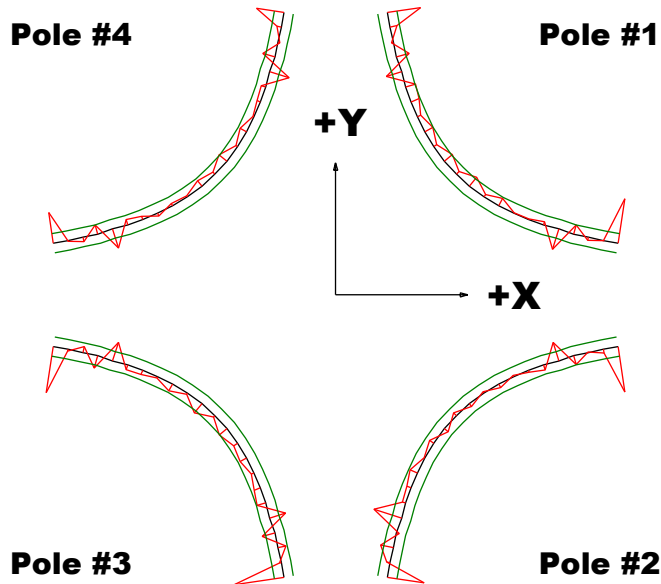
	Nominal Distance	Downstream Pole End	Upstream Pole End
Pole Tip Distance 1-3	0.905 ± 0.001	0.9056	0.90465
Pole Tip Distance 2-4	0.905 ± 0.001	0.90488	0.90536
Gap 1-2	0.274 ± 0.005	0.28147	0.28281
Gap 2-3	0.274 ± 0.005	0.28012	0.28263
Gap 3-4	0.274 ± 0.005	0.28134	0.28242
Gap 1-4	0.274 ± 0.005	0.27961	0.28139

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

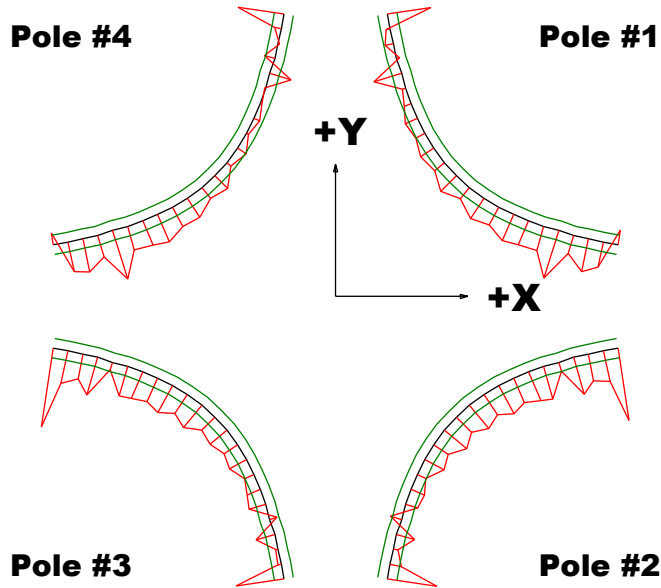
Pole Tip Deviations

Pole Tip	#1	#2	#3	#4
Min. Dev.	-0.00225	-0.00305	-0.00204	-0.00215
Max. Dev.	0.0047	0.0048	0.00526	0.00323

Barcode # : 4107

Mfg. S/N : Q6

Composite Best-fit of Pole Tips, Upstream



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

Dimensions in Inch

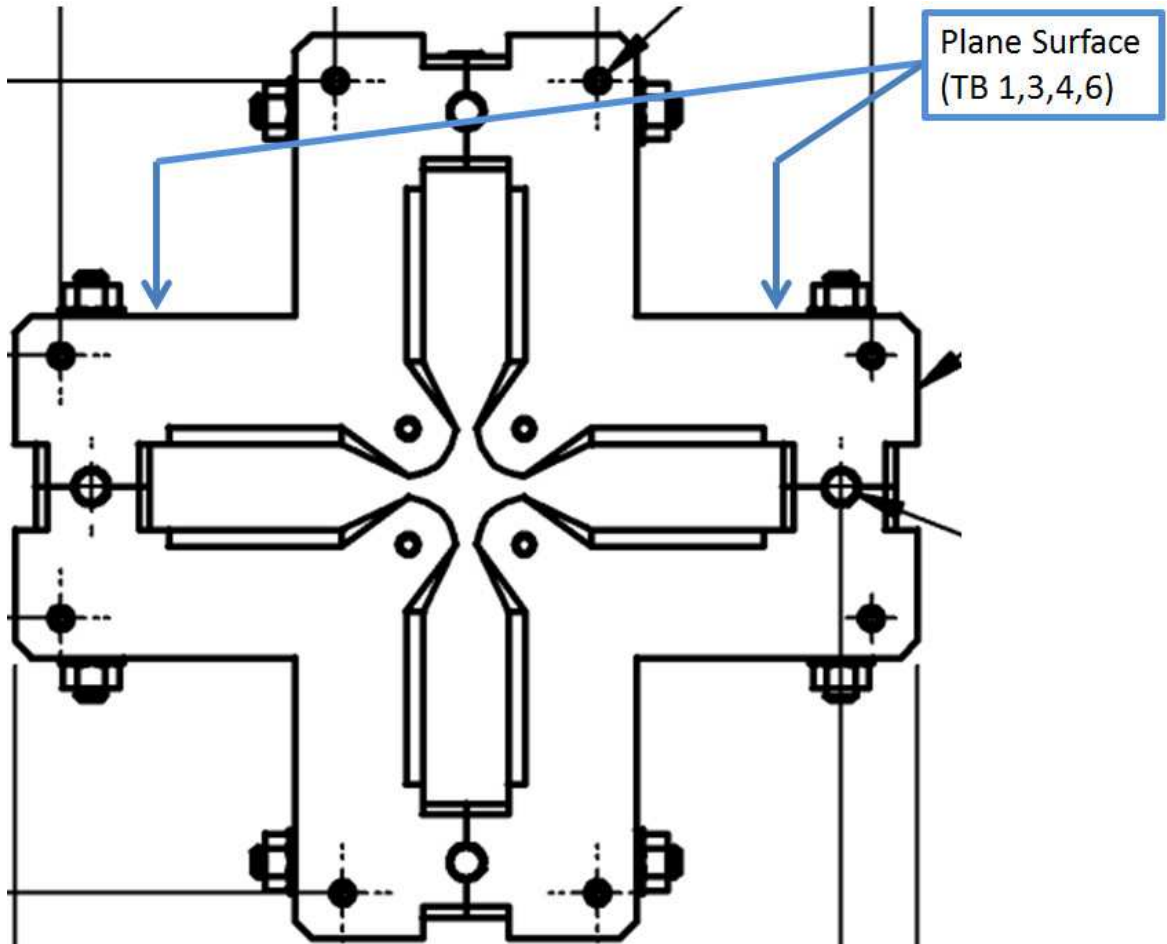
Pole Tip Deviations

Pole Tip	#1	#2	#3	#4
Min. Dev.	-0.00521	-0.00121	-0.00082	-0.00531
Max. Dev.	0.00459	0.00764	0.0083	0.00484

Barcode # : 4107

Mfg. S/N : Q6

Angle of the Composite Pole Tip Best-Fit In Relation to Plane Surface of TB 1,2,5,6



Angle in Decimal Degrees ° :-0.03008

Angle in Milliradians :-0.52495

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