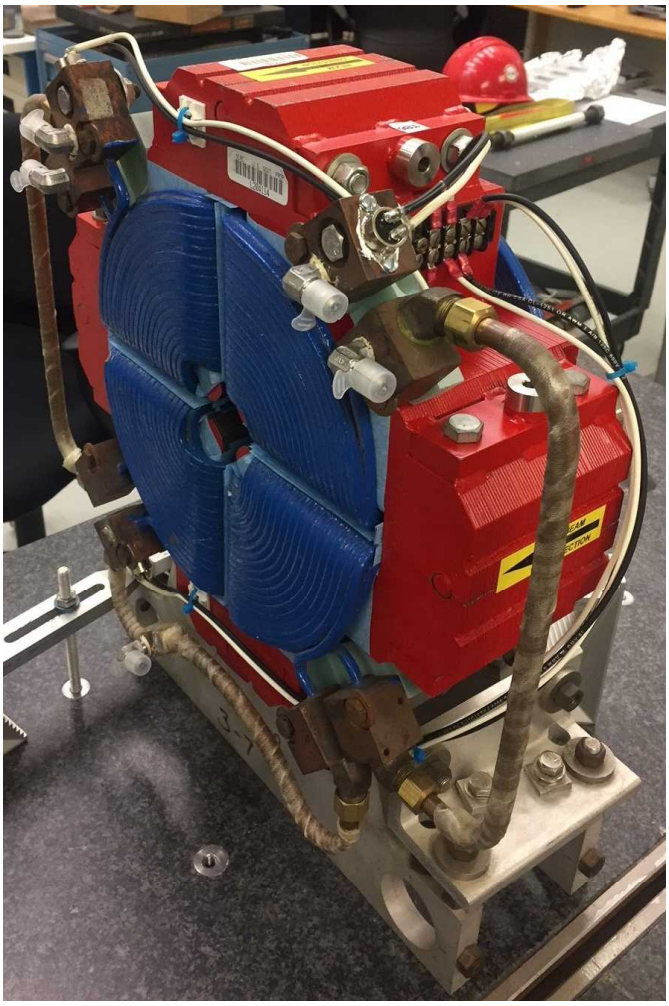
LCLS II 1.085Q4.31 Fiducialization Report



Inspector : K. Caban
Engineer : J. Amann
Drawing No. : SA-902-675-01
Barcode # : 4120
Mfg. S/N : E069

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.

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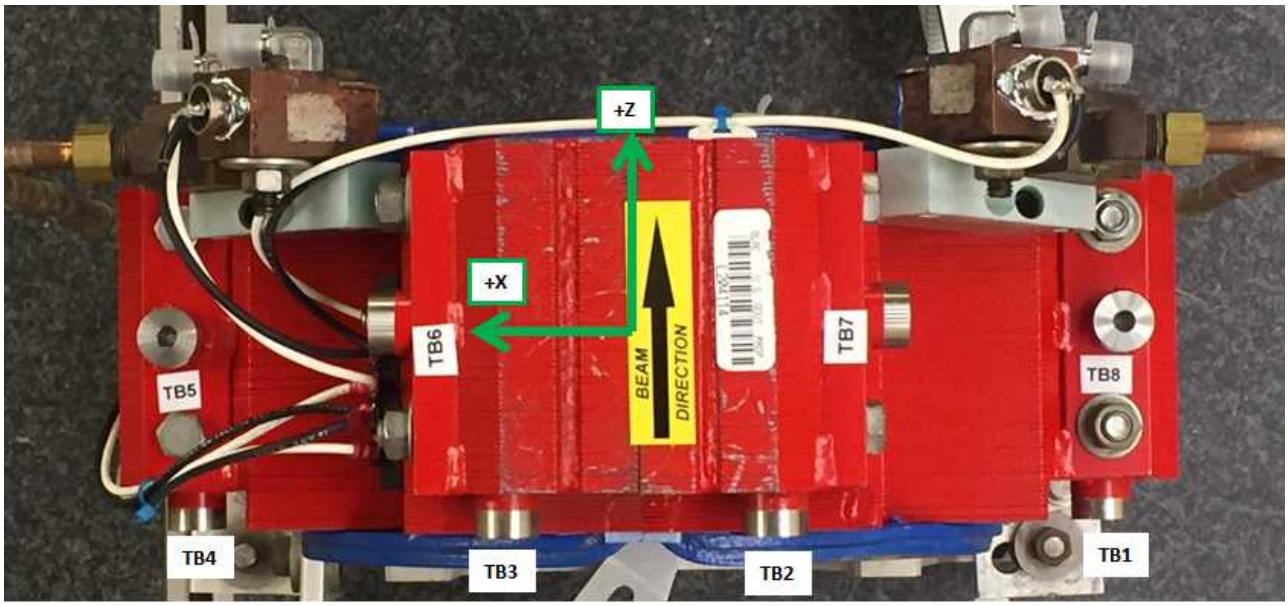
Tooling Ball Locations



Tooling Ball	X Coord.	Y Coord.	Z Coord.
TB 1	-5.7556	1.5041	-3.1935
TB 2	-1.5087	5.7398	-3.1893
TB 3	1.5098	5.7483	-3.1991
TB 4	5.7464	1.4967	-3.2050
TB 5	5.8613	4.0050	0.2150
TB 6	3.9973	5.8603	0.2394
TB 7	-4.0040	5.8528	0.2077
TB 8	-5.8666	3.9978	0.2203

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

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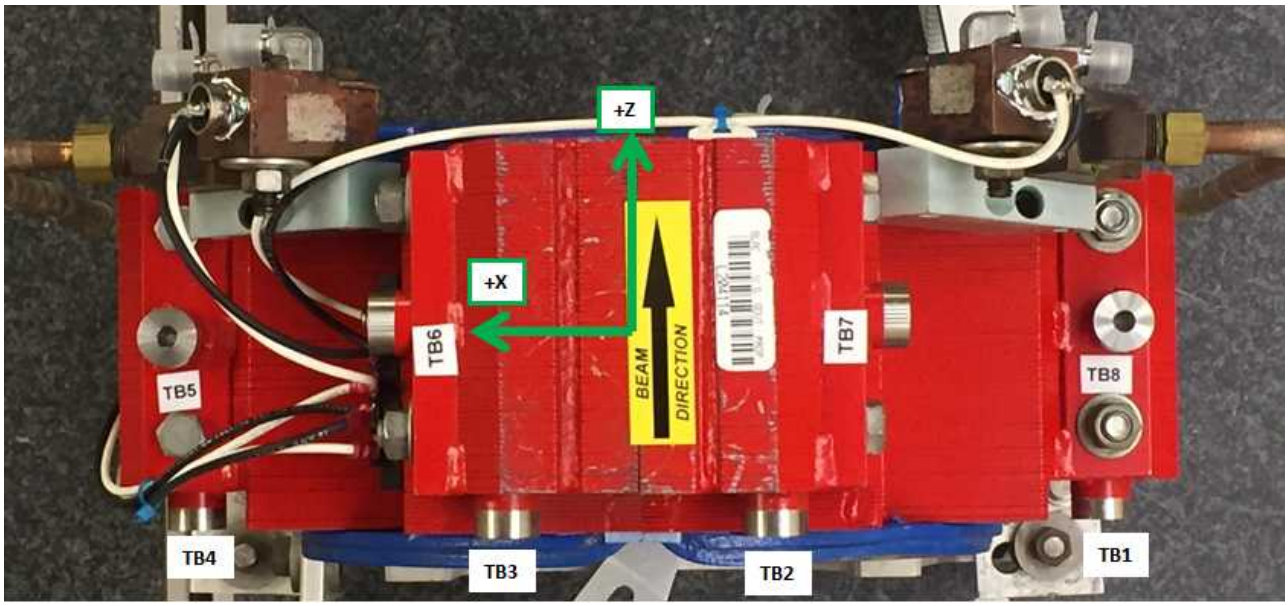
Tooling Ball Locations



Tooling Ball	X Coord.	Y Coord.	Z Coord.
TB 1	-5.7546	1.5024	-2.5054
TB 2	-1.5078	5.7456	-2.5005
TB 3	1.5043	5.7517	-2.5106
TB 4	5.7473	1.4987	-2.5155
TB 5	5.8613	3.3161	0.2155
TB 6	3.3093	5.8622	0.2381
TB 7	-3.3157	5.8538	0.2086
TB 8	-5.8643	3.3102	0.2192

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

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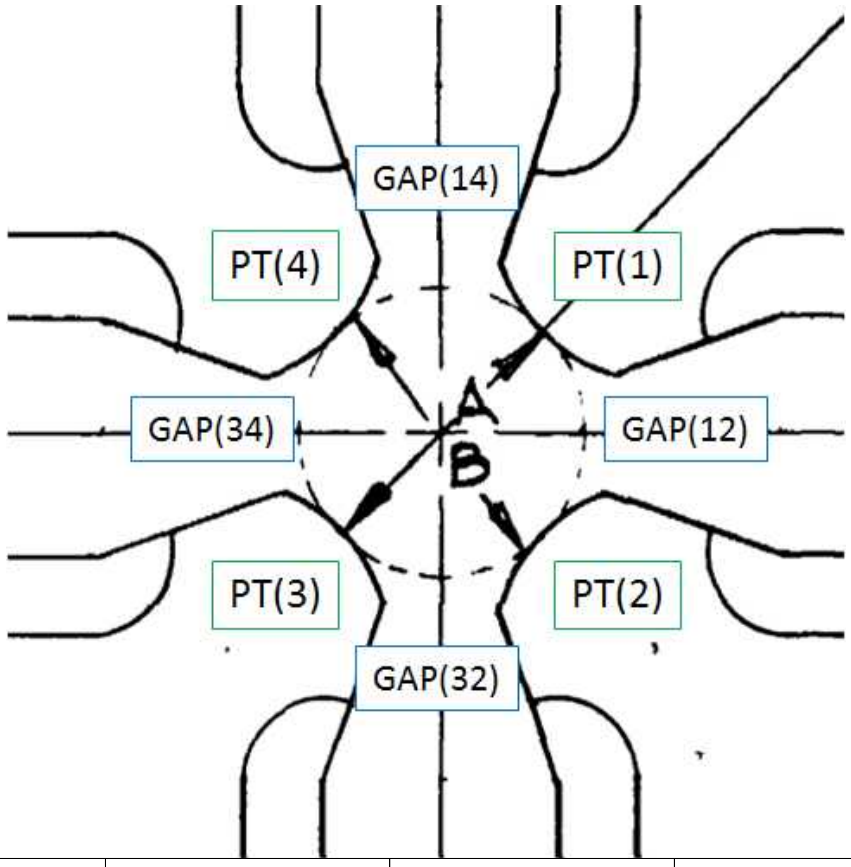
Pole Tip Gap Measurements



	Nominal Distance	Downstream Pole End	Upstream Pole End
PT Distance 1-3(A)	1.085	1.08519	1.08577
PT Distance 2-4(B)	1.085	1.08426	1.08757
Gap 1-2	0.4546	0.4597	0.45719
Gap 2-3	0.4546	0.45407	0.46147
Gap 3-4	0.4546	0.45716	0.46034
Gap 4-1	0.4546	0.46025	0.4587

Dimensions in Inch

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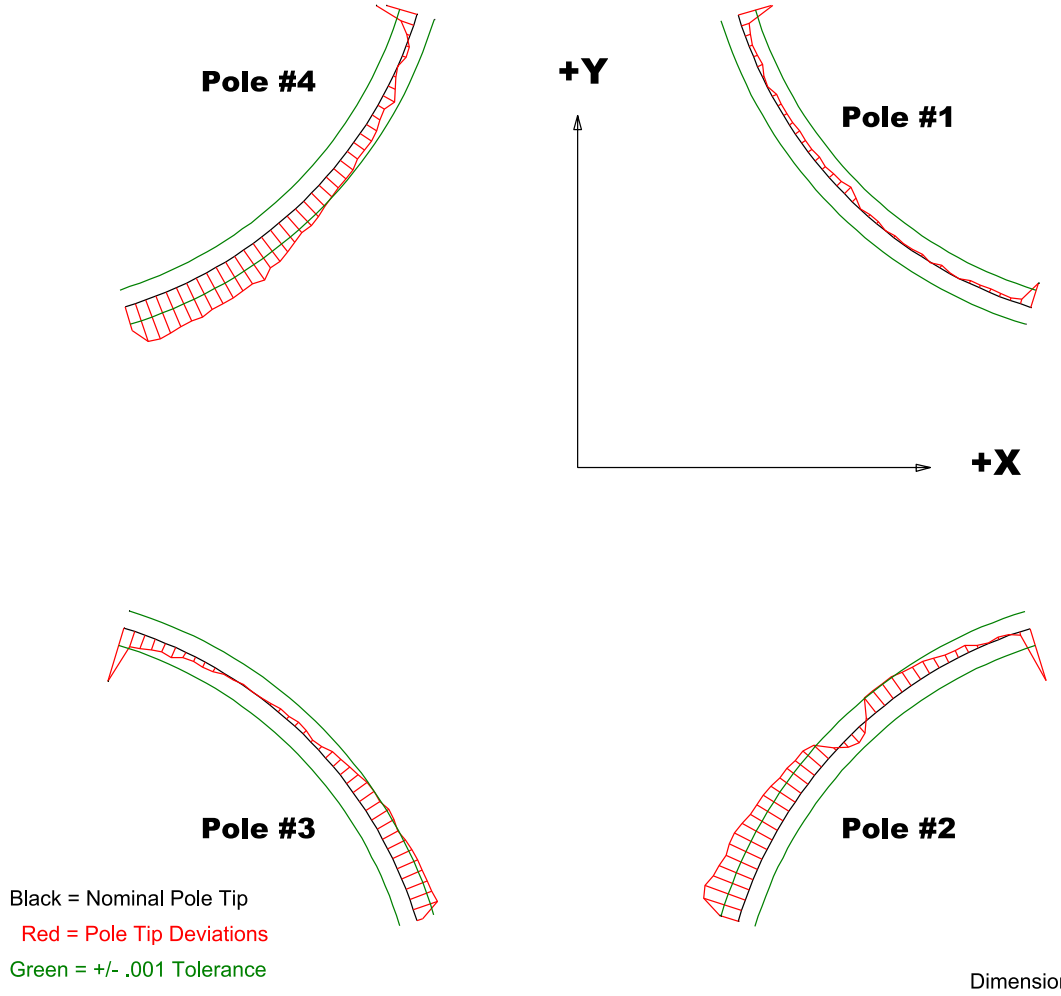
Composite Best-fit of Pole Tips, Downstream



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.	-0.00206	-0.00303	-0.00311	-0.00294
Max. Dev.	0.00003	0.00239	0.00143	0.00233

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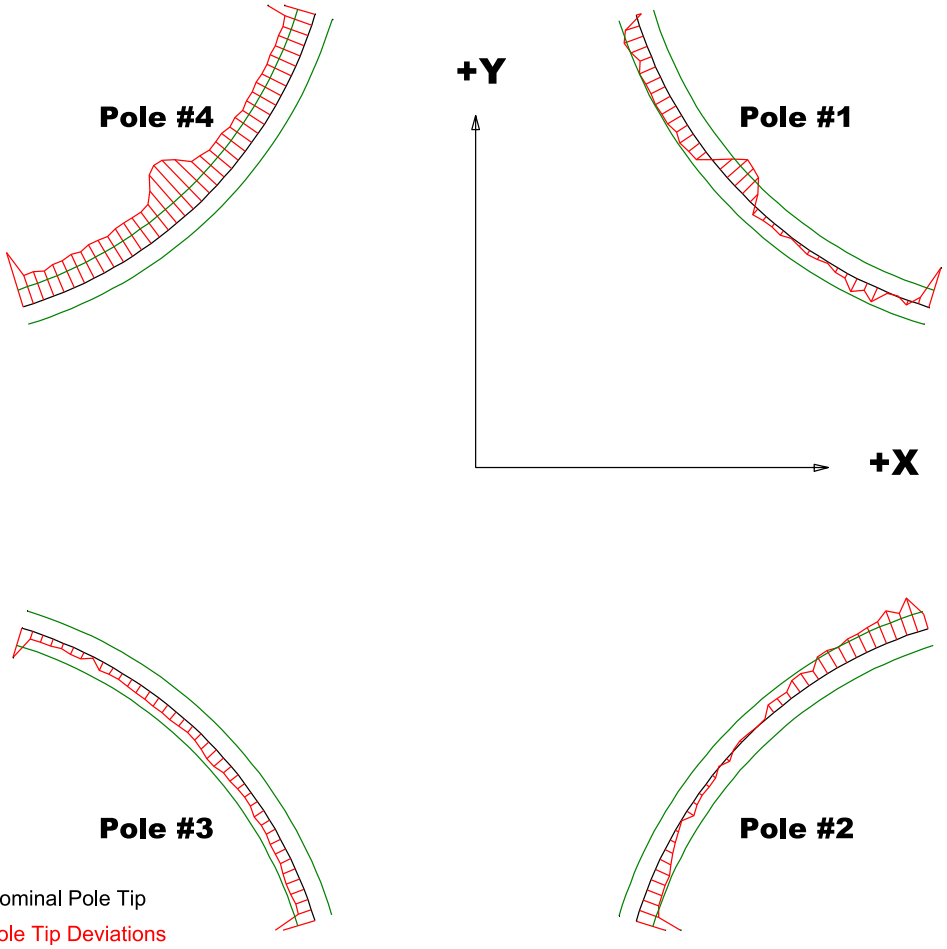
Mfg. S/N : E069

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.	-0.0023	-0.00357	-0.00266	-0.00362
Max. Dev.	0.00114	0.00199	-0.00006	-0.00143

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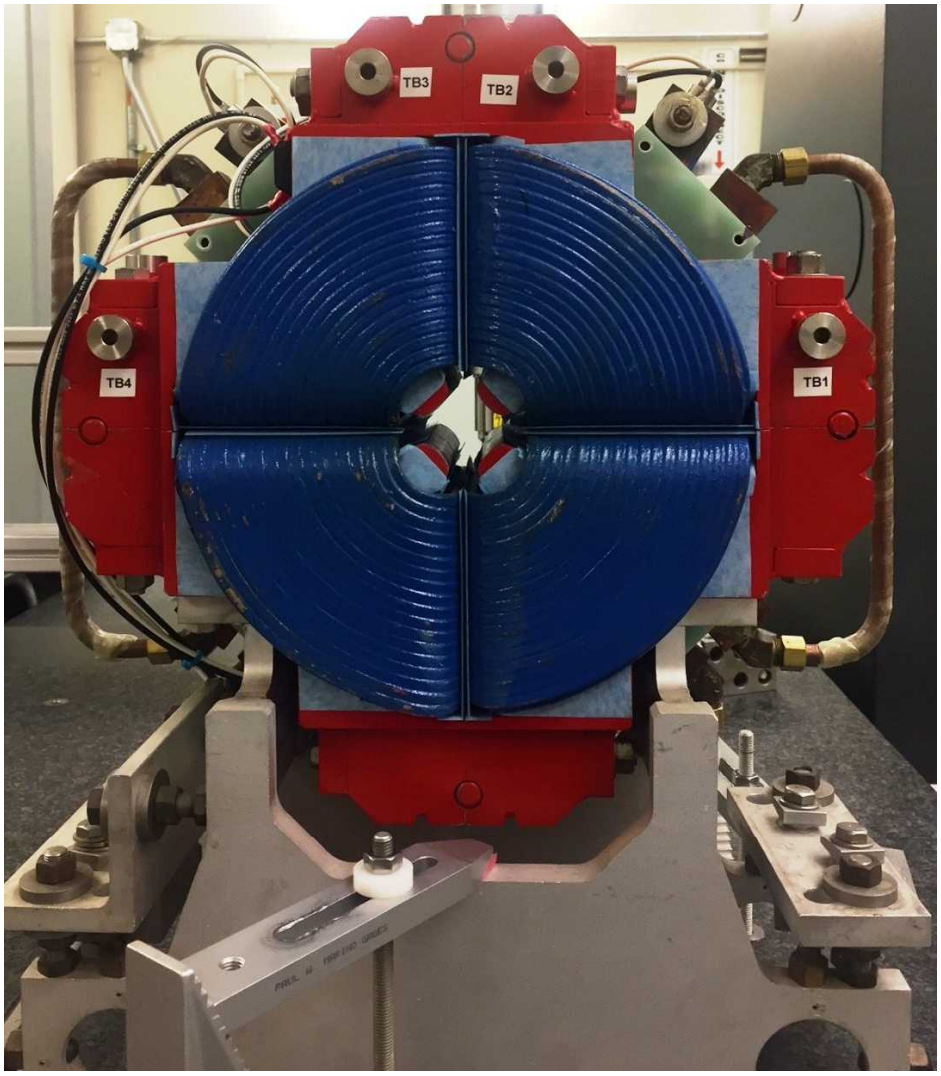
Angle of the Composite Pole Tip Best-Fit In Relation to TB 5 Plate and TB 8 Plate



Angle in Decimal Degrees ° :-0.01808

Angle in Milliradians :-0.31560

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