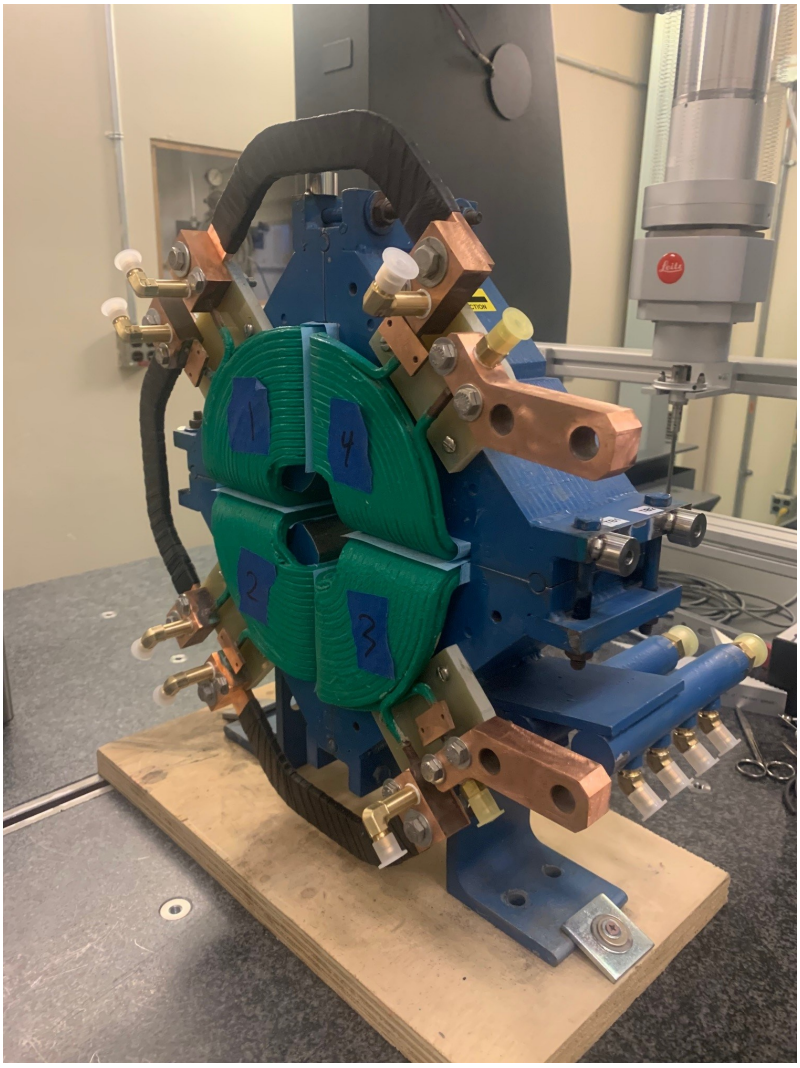
LCLS II 2Q4W Fiducialization Report

S30XL Refurb Quadrupole MFD FILE: 40395-5



Inspector : K. Caban

Engineer : A. Ibrahimov

Drawing No. : SA-344-112-18 R00

Barcode # : 4258

Mfg. S/N : QDAS18A

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 0.150 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 and +Z points towards Terminal Bus End.

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. +Z points towards Terminal Bus End.

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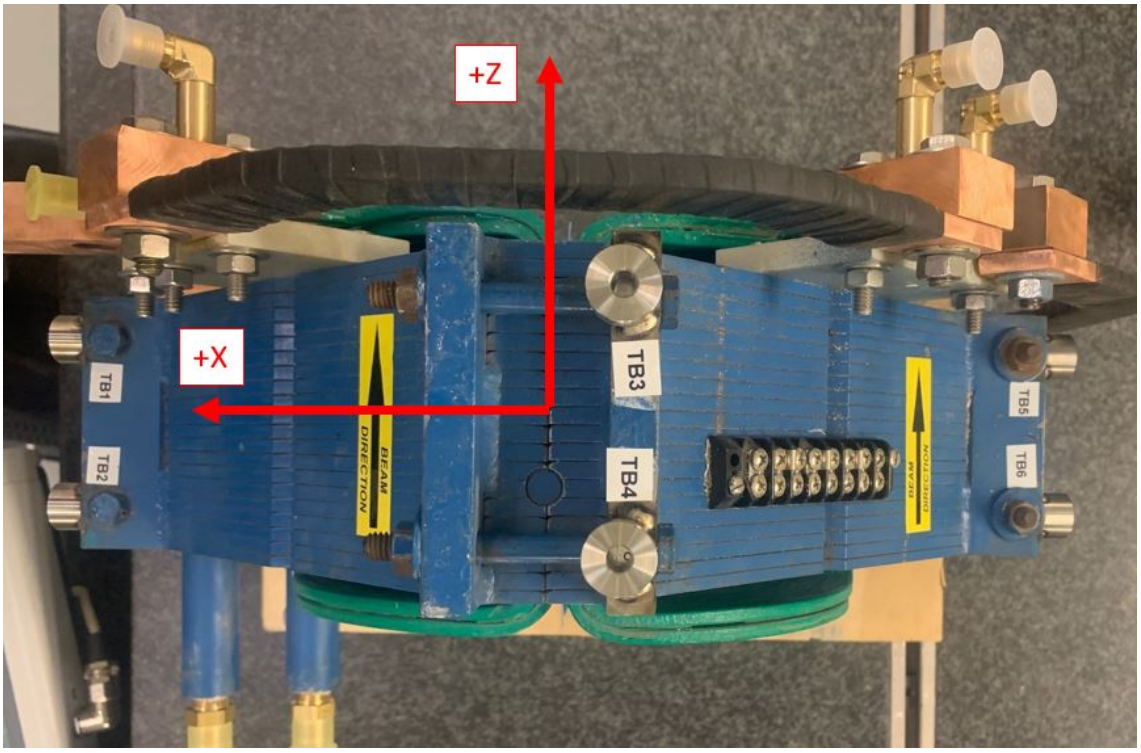
Tooling Ball Locations



Tooling Ball	X Coord.	Y Coord.	Z Coord.
TB 1	9.0506	0.7965	1.3046
TB 2	9.0478	0.8107	-1.3192
TB 3	-0.8233	9.0449	1.3111
TB 4	-0.8238	9.0439	-1.3137
TB 5	-9.0492	0.7810	1.3138
TB 6	-9.0488	0.7939	-1.3187

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

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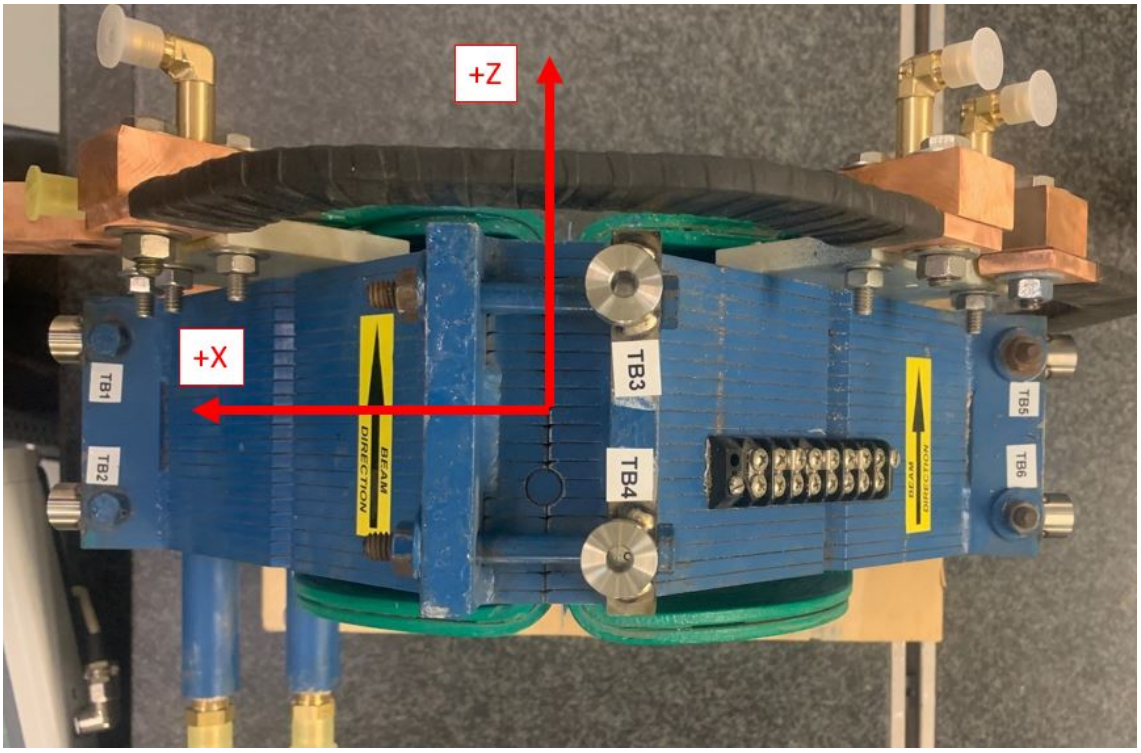
Tooling Ball Locations



Tooling Ball	X Coord.	Y Coord.	Z Coord.
TB 1	8.3634	0.7986	1.3066
TB 2	8.3607	0.8106	-1.3190
TB 3	-0.8183	8.3578	1.3121
TB 4	-0.8160	8.3570	-1.3098
TB 5	-8.3629	0.7857	1.3145
TB 6	-8.3623	0.7978	-1.3167

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

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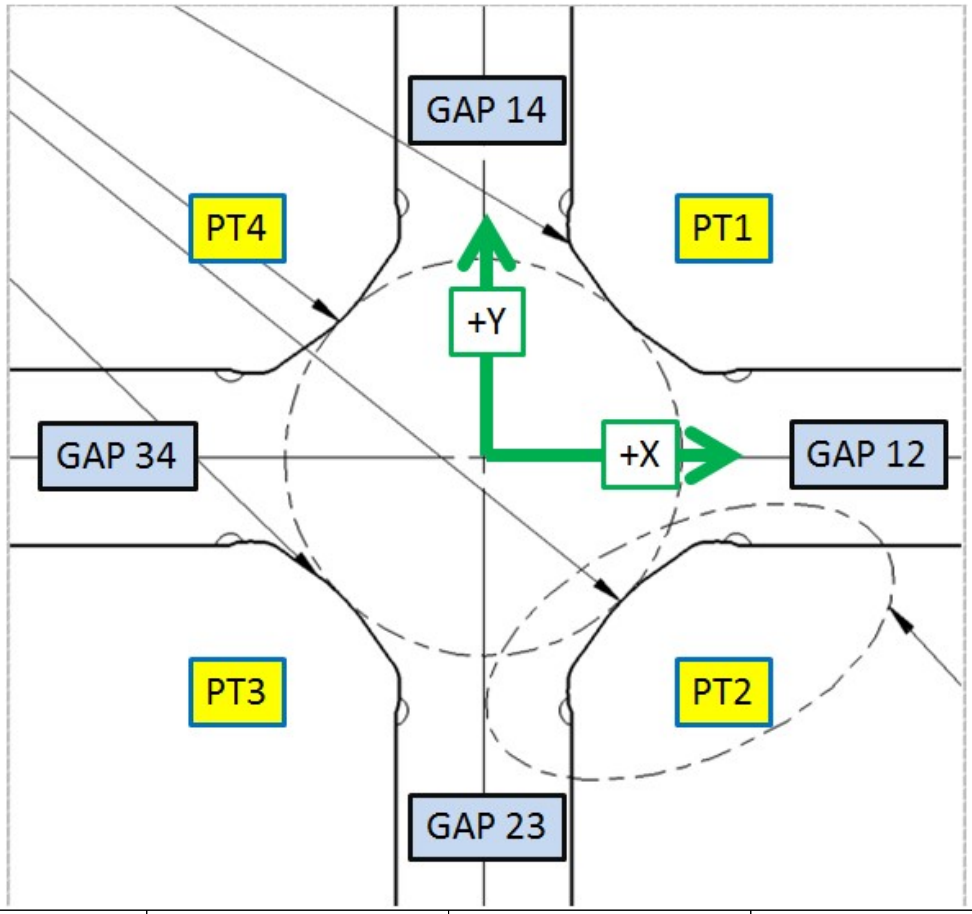
Pole Tip Gap Measurements



	Nominal Distance	Downstream Pole End	Upstream Pole End
PT Distance 1-3	2.026	2.0269	2.028
PT Distance 2-4	2.026	2.0268	2.0292
Gap 1-2	0.8602	0.8599	0.8593
Gap 2-3	0.8602	0.8591	0.8605
Gap 3-4	0.8602	0.8595	0.8577
Gap 1-4	0.8602	0.8594	0.8608

Dimensions in Inch

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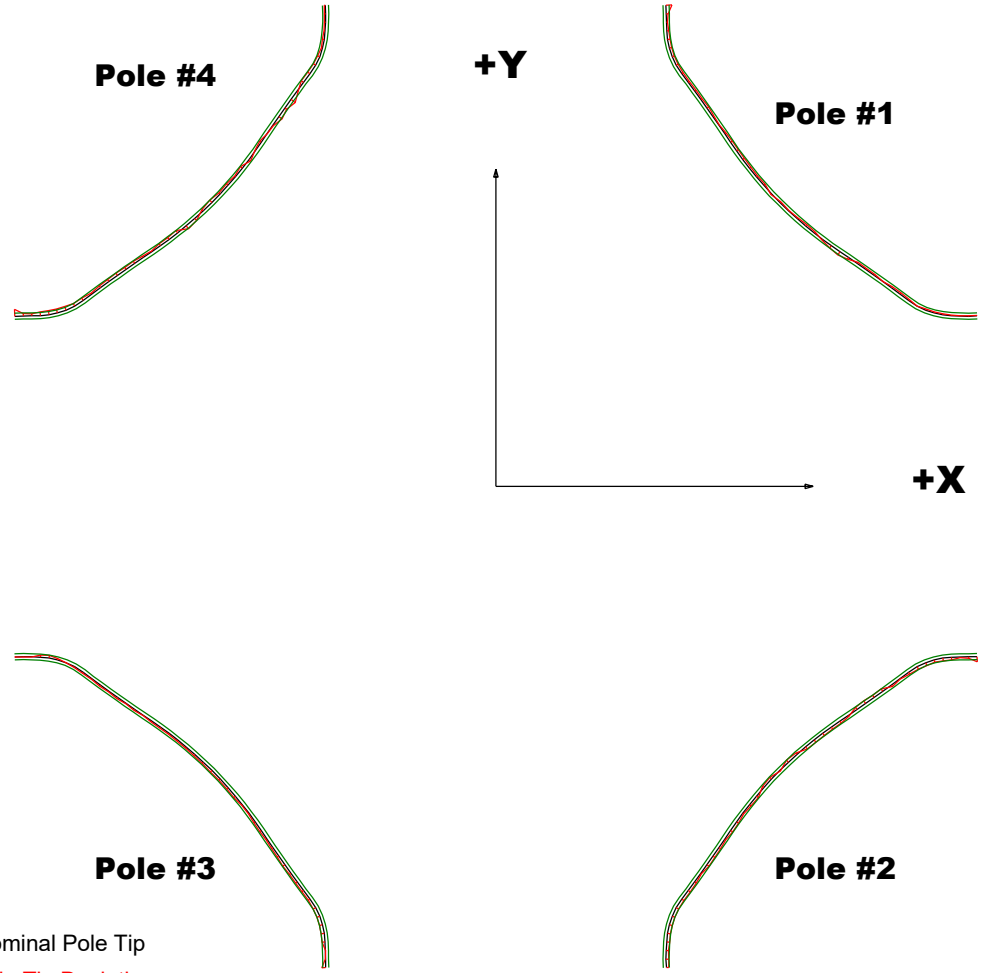
Composite Best-fit of Pole Tips, Downstream



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.	-0.002	-0.0018	-0.0013	-0.0023
Max. Dev.	0.0013	0.0011	0.0009	0.0017

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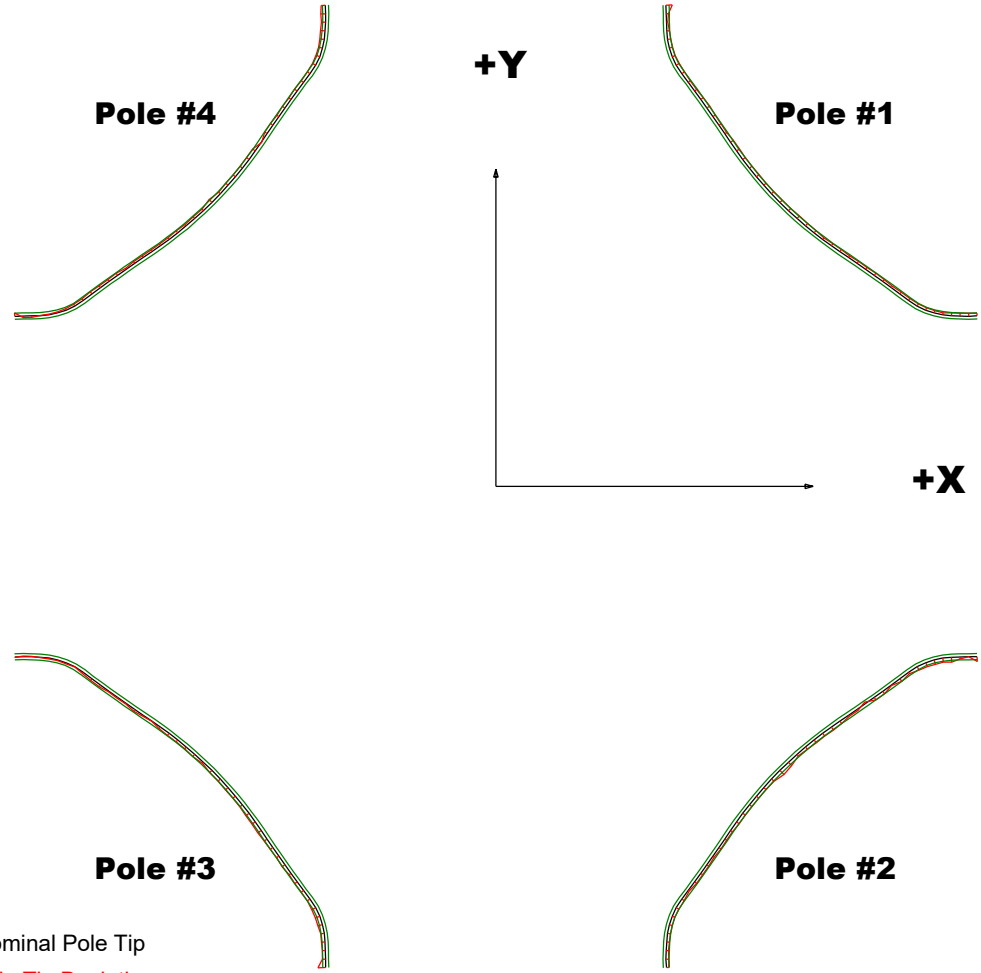
Composite Best-fit of Pole Tips, Upstream



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	-0.002	-0.0026	-0.0017
Max. Dev.	-0.0005	0.0005	0.0002	0.0005

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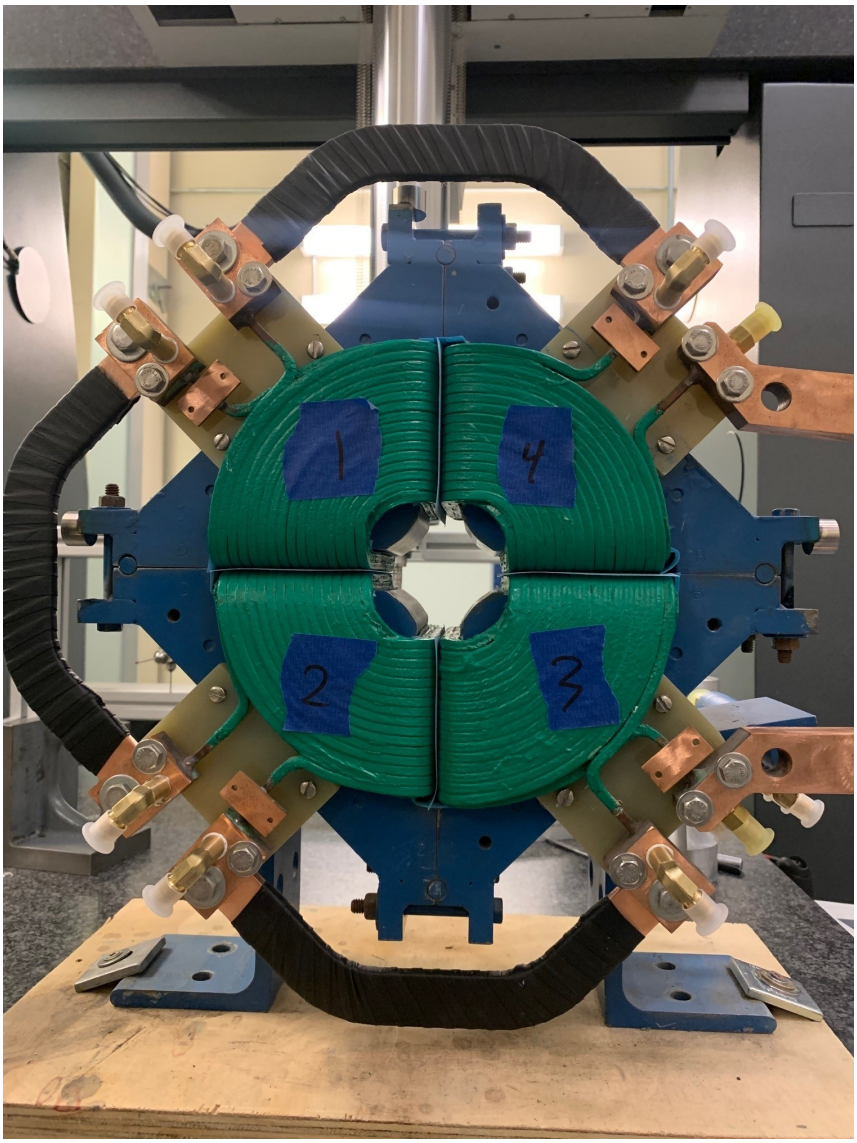
Angle of the Composite Pole Tip Best-Fit



in Decimal Degrees ° :	-0.00357
Angle in Milliradians :	-0.06227

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