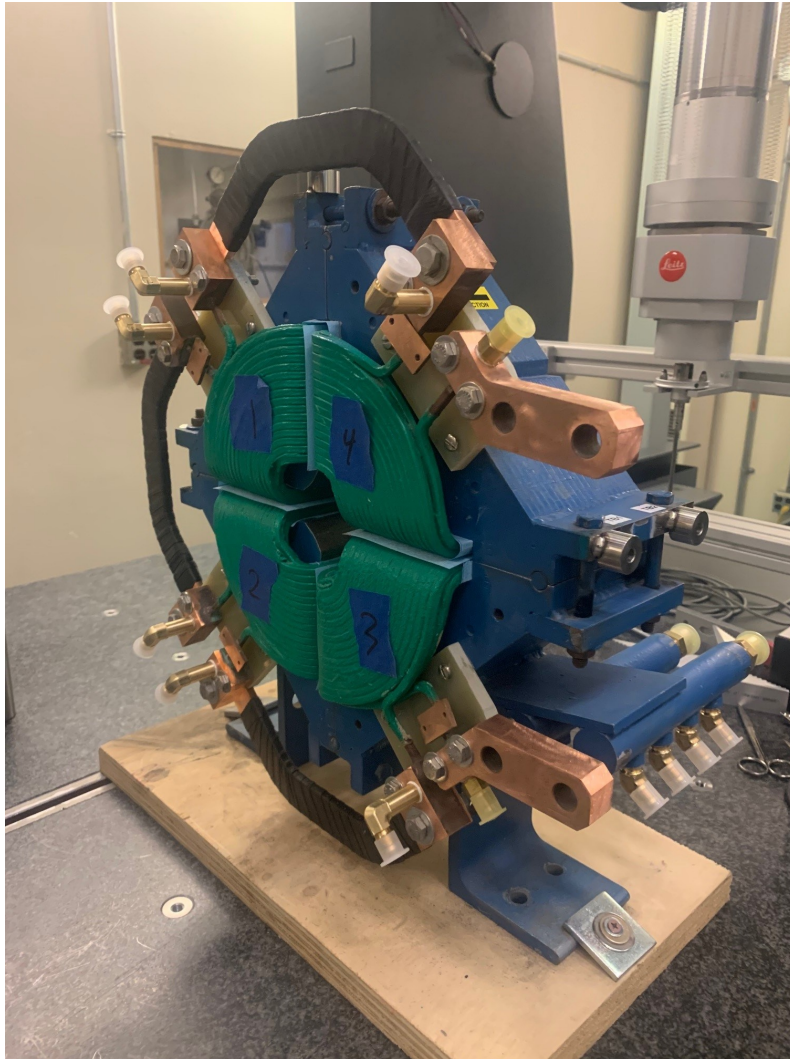


LCLS II 2Q4W Fiducialization Report

S30XL Refurb Quadrupole MFD FILE: 40395-5



Inspector : K. Caban
Engineer : A. Ibrahimov
Drawing No. : SA-344-112-18 R00
Barcode # : 4256
Mfg. S/N : QDAS16

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.

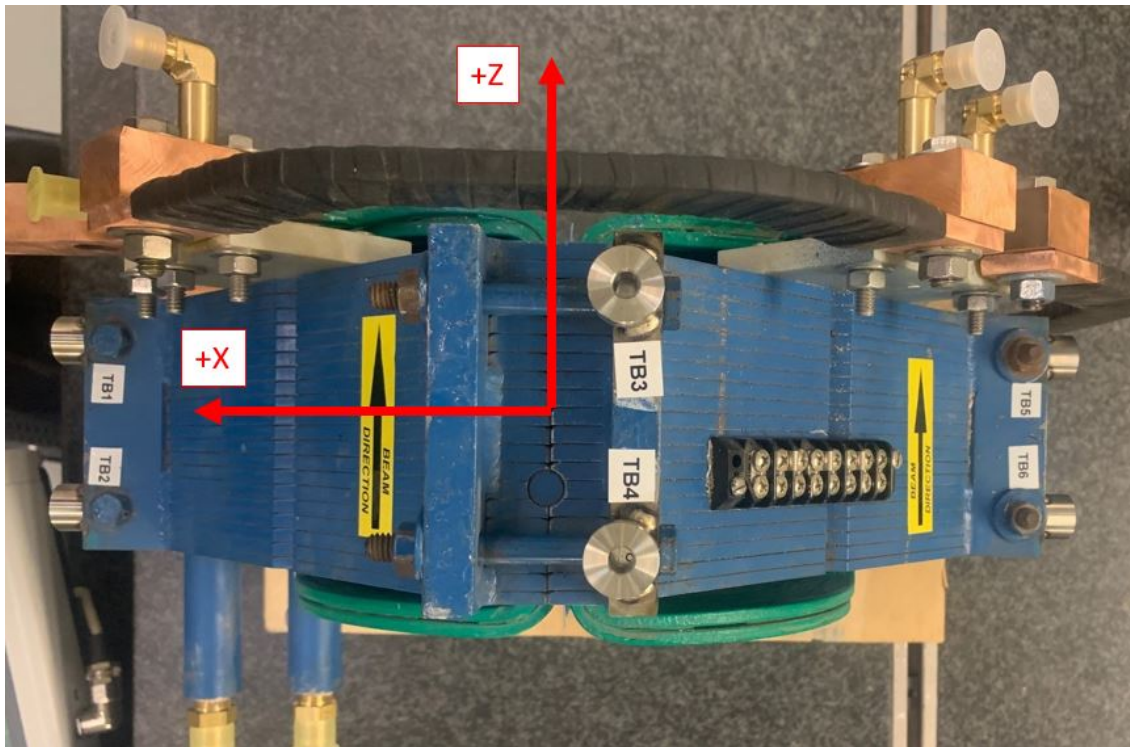
Coordinate Origins

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



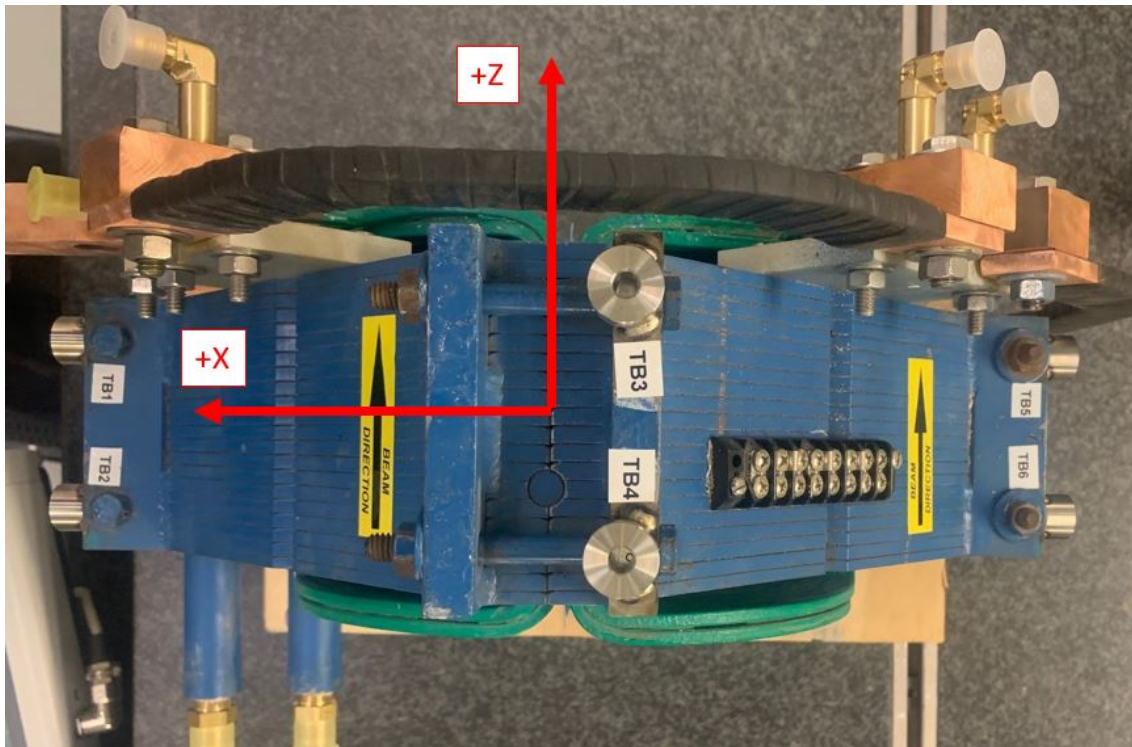
Tooling Ball	X Coord.	Y Coord.	Z Coord.
TB 1	9.0582	0.7817	1.3000
TB 2	9.0538	0.8062	-1.3173
TB 3	-0.7865	9.0462	1.2896
TB 4	-0.8127	9.0474	-1.3067
TB 5	-9.0487	0.7854	1.2992
TB 6	-9.0487	0.7989	-1.3212

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

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Tooling Ball Locations



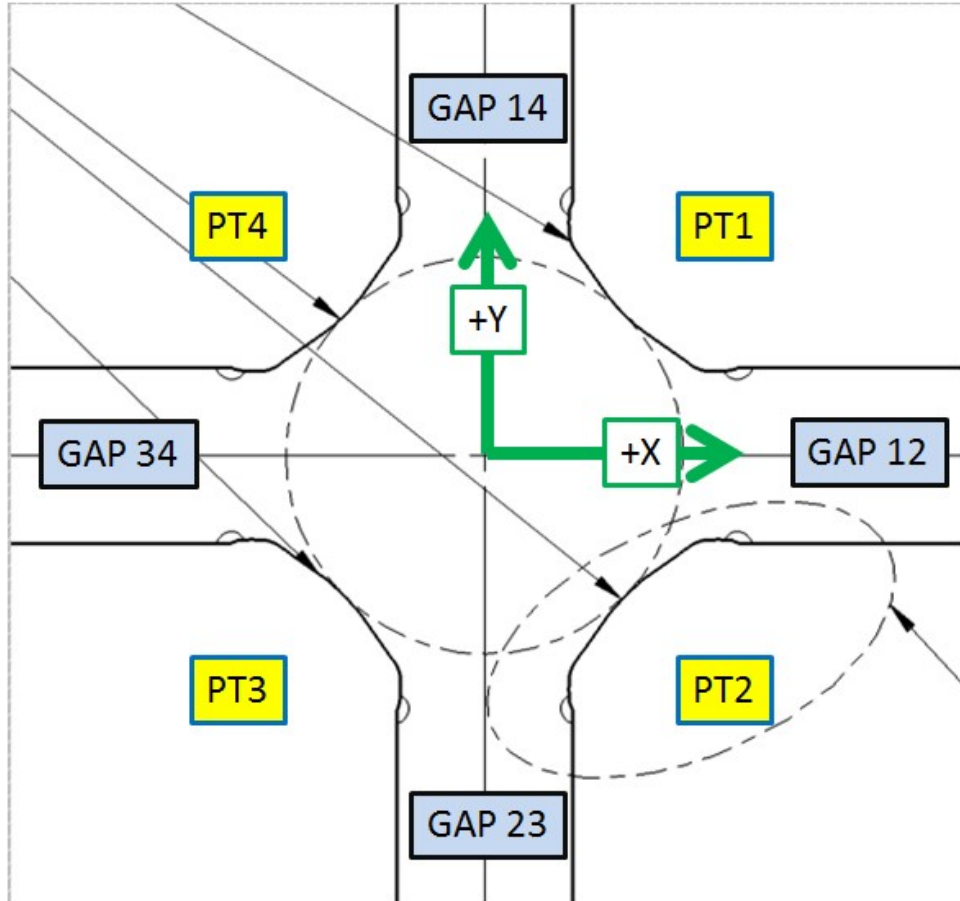
Tooling Ball	X Coord.	Y Coord.	Z Coord.
TB 1	8.3706	0.7891	1.3005
TB 2	8.3669	0.8064	-1.3175
TB 3	-0.7862	8.3596	1.2914
TB 4	-0.8092	8.3612	-1.3073
TB 5	-8.3625	0.7914	1.3006
TB 6	-8.3617	0.8053	-1.3219

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

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Pole Tip Gap Measurements

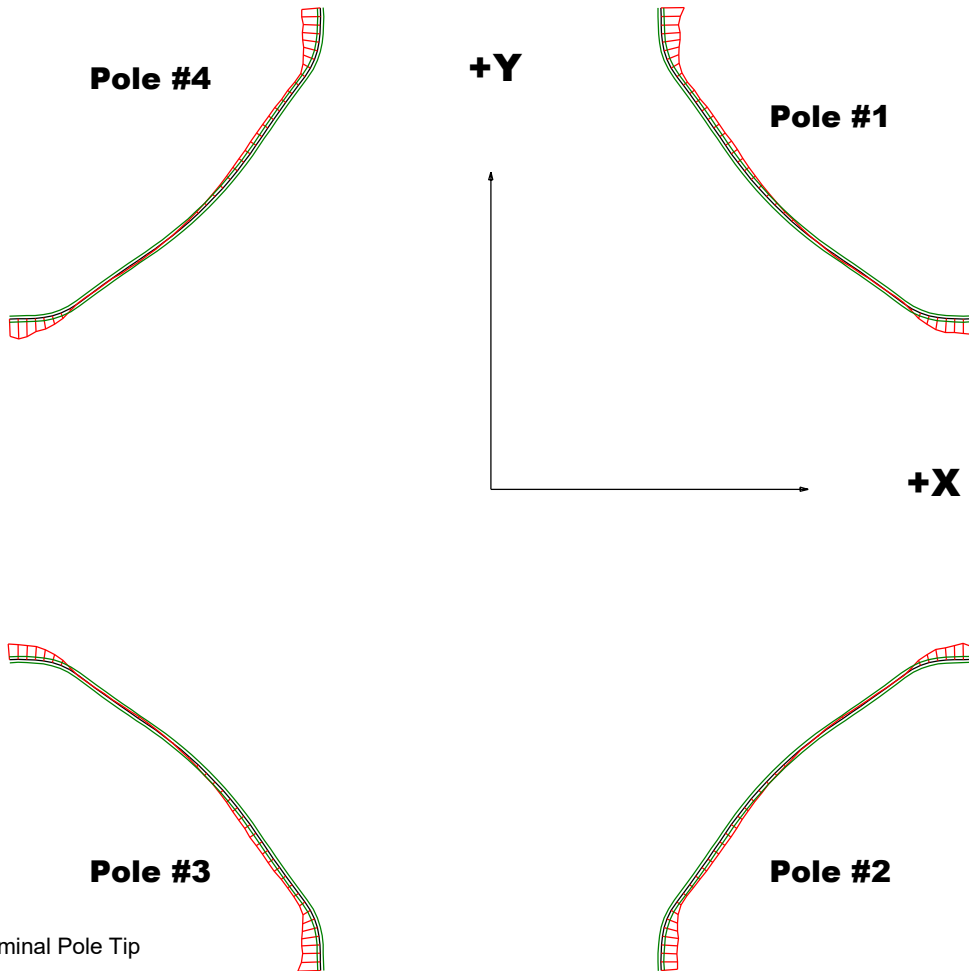


	Nominal Distance	Downstream Pole End	Upstream Pole End
PT Distance 1-3	2.026	2.0282	2.0257
PT Distance 2-4	2.026	2.0279	2.0286
Gap 1-2	0.8602	0.8484	0.848
Gap 2-3	0.8602	0.8657	0.8704
Gap 3-4	0.8602	0.8472	0.8467
Gap 1-4	0.8602	0.8707	0.869

Dimensions in Inch

Barcode # : 4256
Mfg. S/N : QDAS16

Composite Best-fit of Pole Tips, Downstream



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

Dimensions in Inch

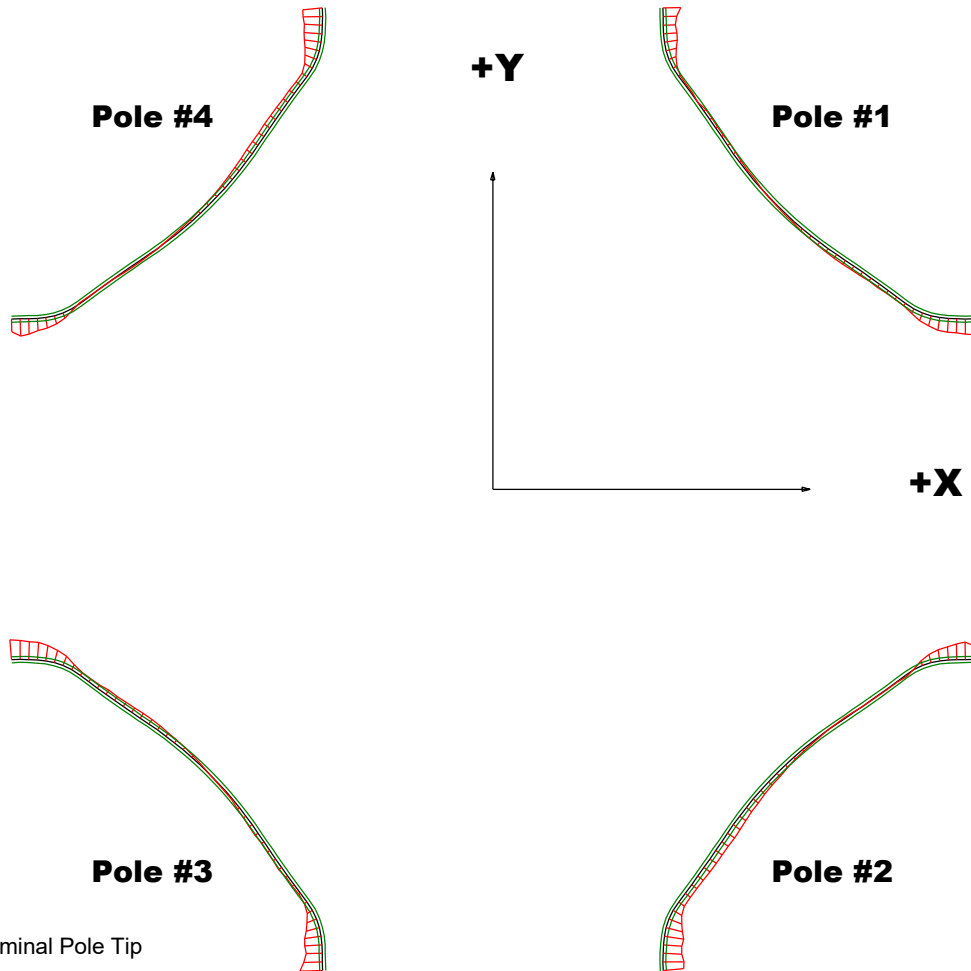
Pole Tip Deviations

Pole Tip	#1	#2	#3	#4
Min. Dev.	-0.0077	-0.0055	-0.0075	-0.0063
Max. Dev.	0.0052	0.0054	0.0052	0.0066

Barcode # : 4256

Mfg. S/N : QDAS16

Composite Best-fit of Pole Tips, Upstream



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

Dimensions in Inch

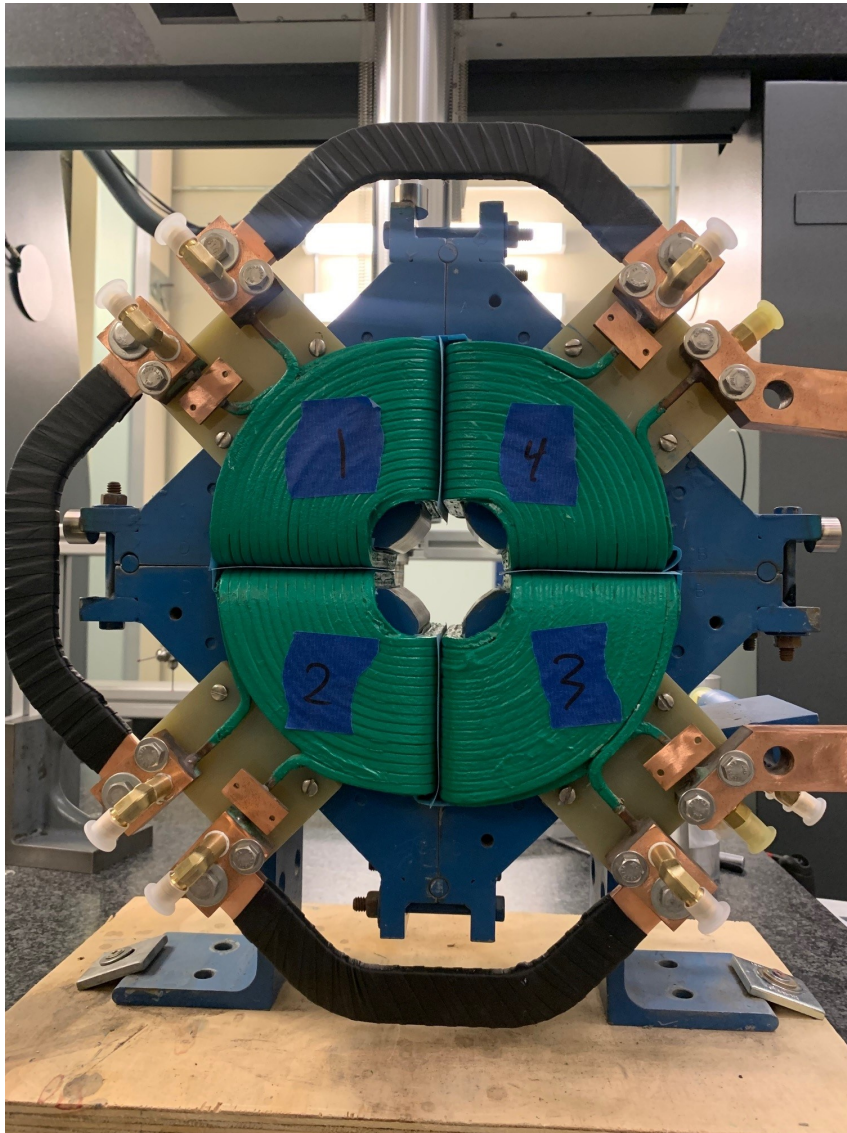
Pole Tip Deviations

Pole Tip	#1	#2	#3	#4
Min. Dev.	-0.0059	-0.007	-0.0075	-0.0065
Max. Dev.	0.0053	0.0058	0.0067	0.0057

Barcode # : 4256

Mfg. S/N : QDAS16

Angle of the Composite Pole Tip Best-Fit



in Decimal Degrees ° : -0.00684

Angle in Milliradians : -0.11934

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