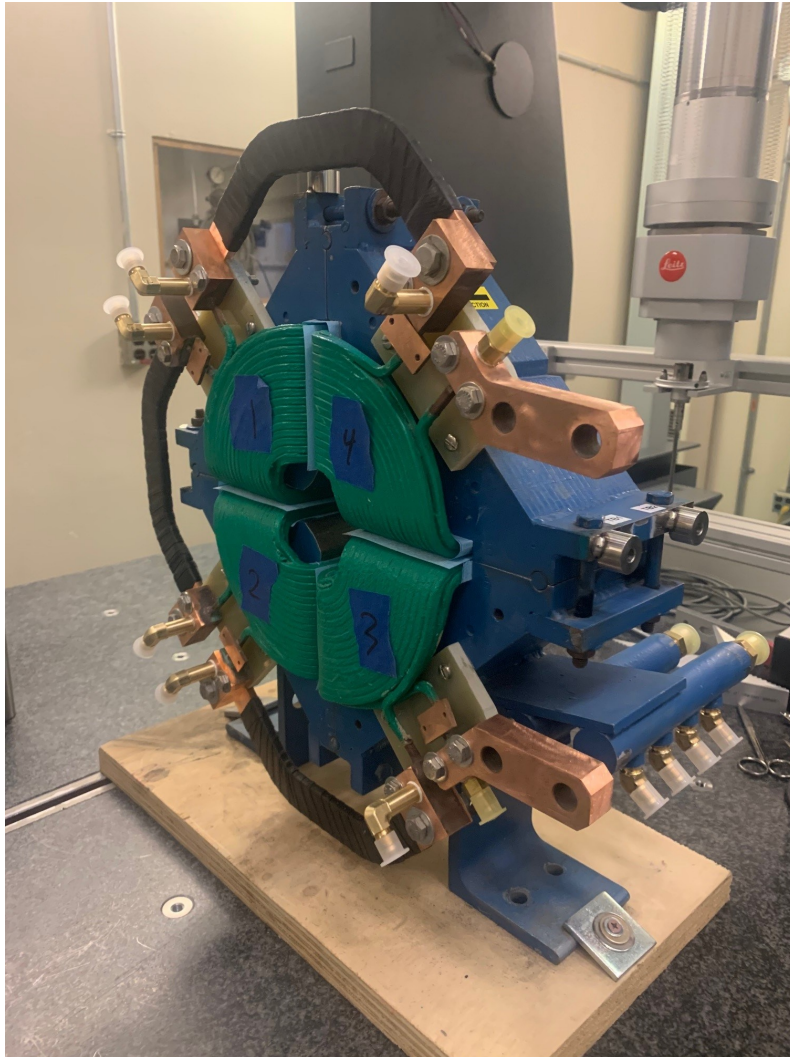


LCLS II 2Q4W Fiducialization Report

S30XL Refurb Quadrupole MFD FILE: 40395-5



Inspector : K. Caban
Engineer : A. Ibrahimov
Drawing No. : SA-344-112-18 R00
Barcode # : 4262
Mfg. S/N : QDAS14

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.

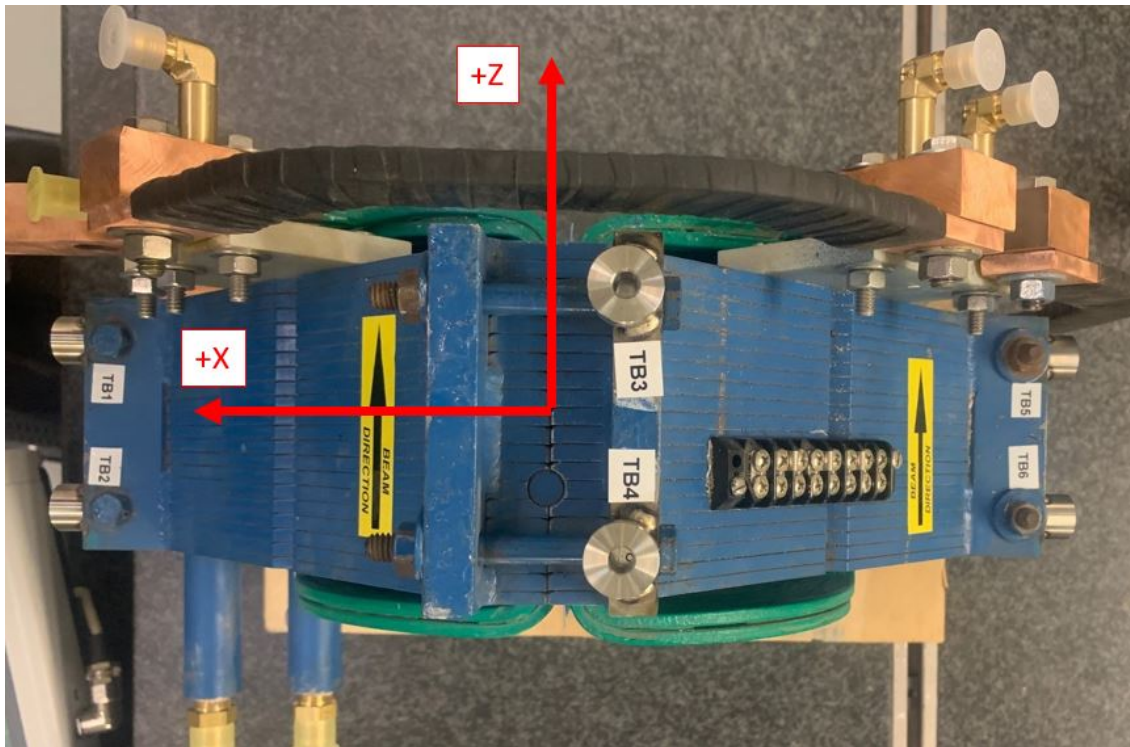
Coordinate Origins

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



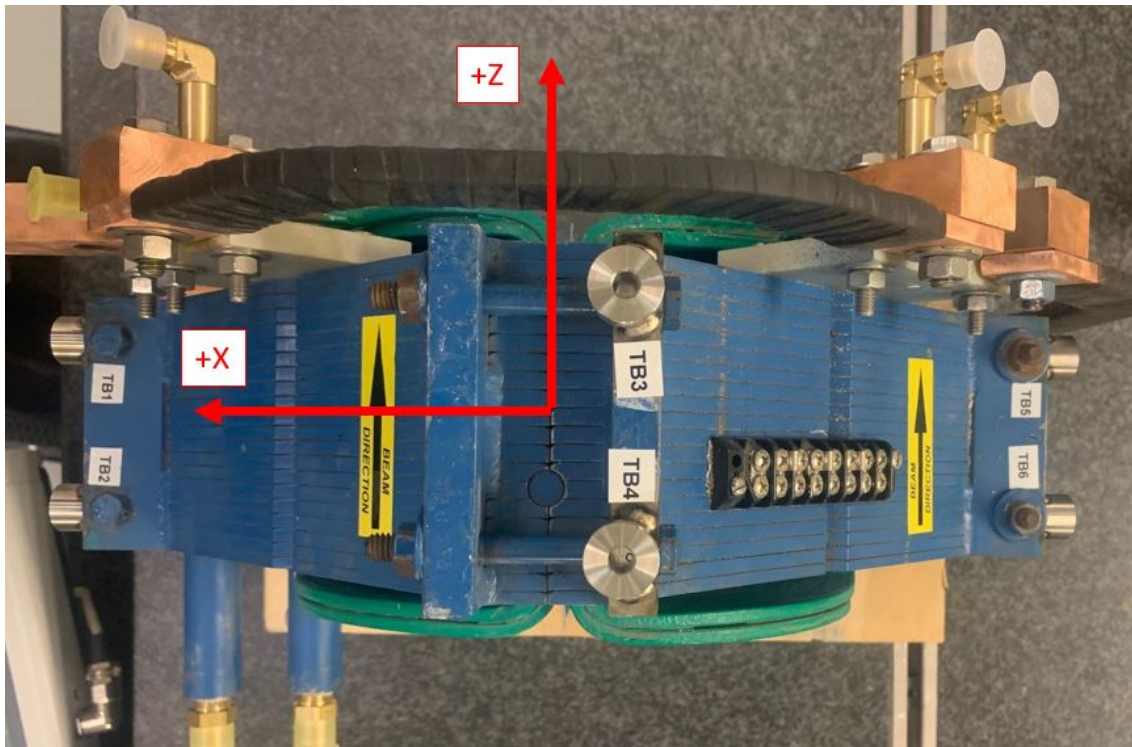
Tooling Ball	X Coord.	Y Coord.	Z Coord.
TB 1	9.0539	0.7968	1.3273
TB 2	9.0546	0.8059	-1.3000
TB 3	-0.7998	9.0519	1.3028
TB 4	-0.7766	9.0490	-1.3020
TB 5	-9.0432	0.7797	1.3102
TB 6	-9.0440	0.7860	-1.3111

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

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Tooling Ball Locations



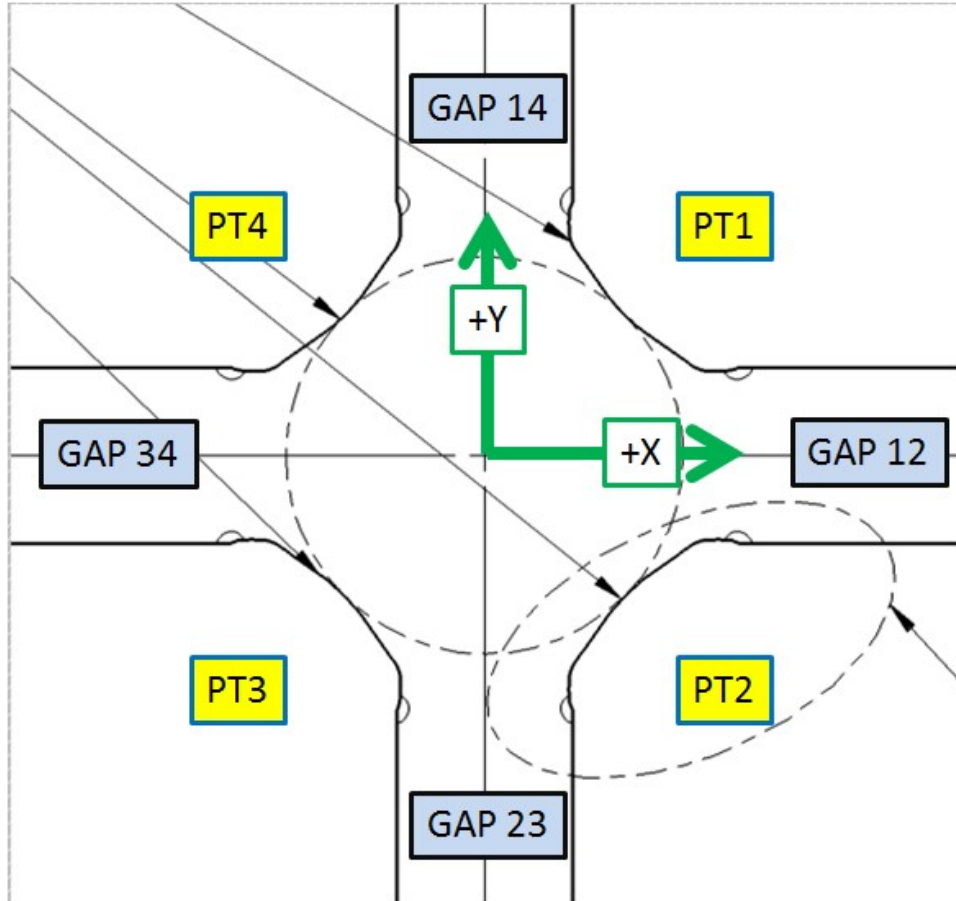
Tooling Ball	X Coord.	Y Coord.	Z Coord.
TB 1	8.3665	0.8030	1.3278
TB 2	8.3674	0.8083	-1.3004
TB 3	-0.7949	8.3652	1.3047
TB 4	-0.7775	8.3625	-1.3013
TB 5	-8.3562	0.7827	1.3102
TB 6	-8.3573	0.7899	-1.3126

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

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Pole Tip Gap Measurements



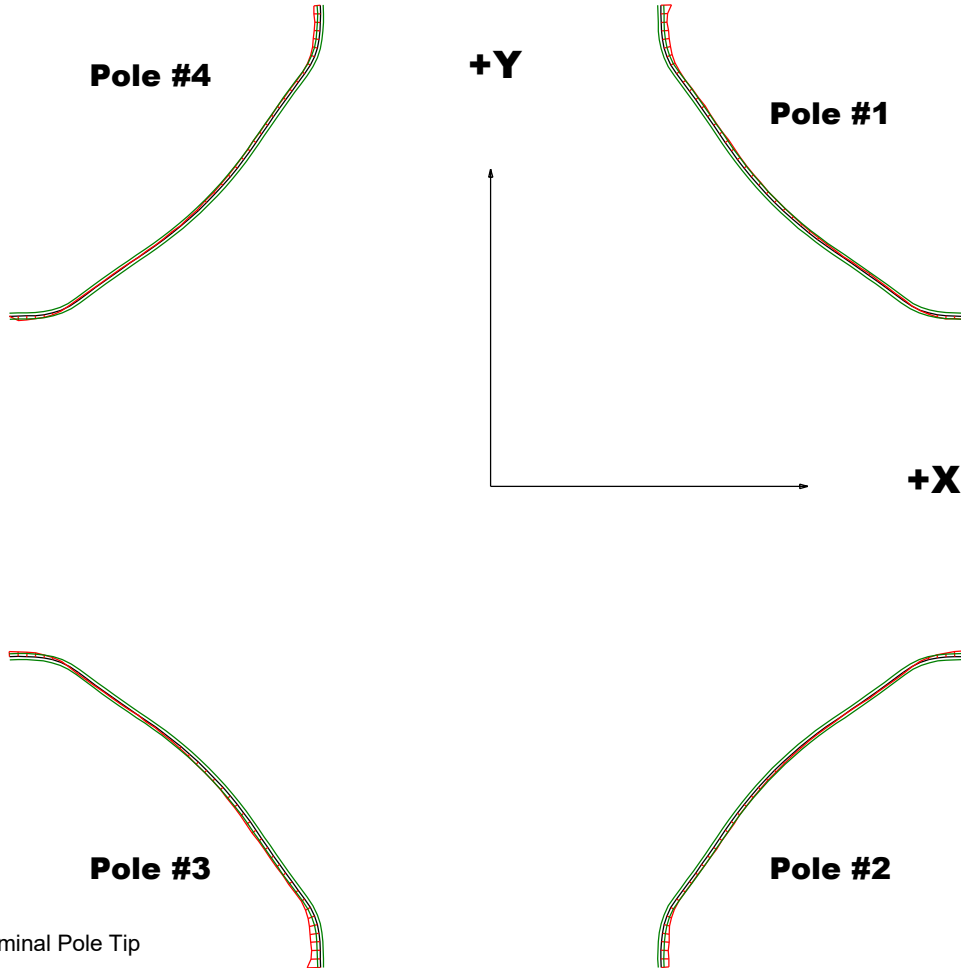
	Nominal Distance	Downstream Pole End	Upstream Pole End
PT Distance 1-3	2.026	2.0279	2.0268
PT Distance 2-4	2.026	2.0275	2.0295
Gap 1-2	0.8602	0.8552	0.856
Gap 2-3	0.8602	0.8641	0.8616
Gap 3-4	0.8602	0.8556	0.8562
Gap 1-4	0.8602	0.8627	0.8634

Dimensions in Inch

Barcode # : 4262

Mfg. S/N : QDAS14

Composite Best-fit of Pole Tips, Downstream



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

Dimensions in Inch

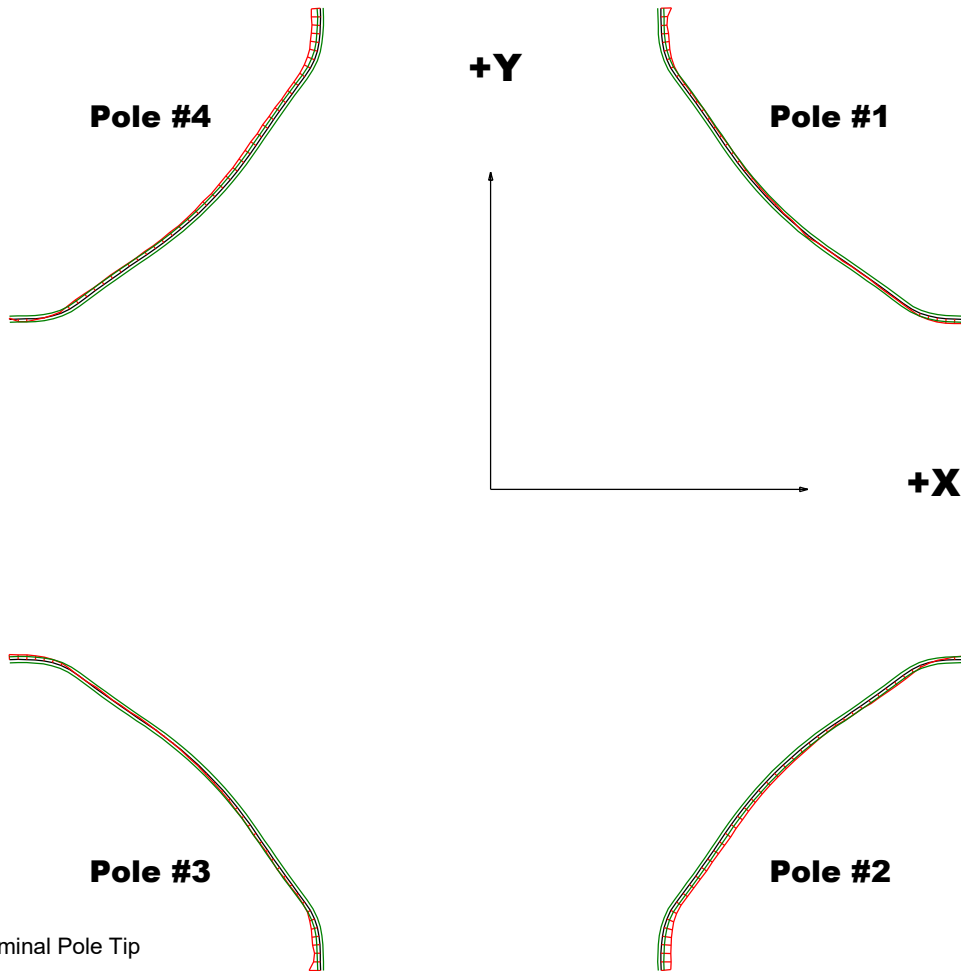
Pole Tip Deviations

Pole Tip	#1	#2	#3	#4
Min. Dev.	-0.0036	-0.0027	-0.0045	-0.0022
Max. Dev.	0.0012	0.0019	0.0017	0.0015

Barcode # : 4262

Mfg. S/N : QDAS14

Composite Best-fit of Pole Tips, Upstream



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

Dimensions in Inch

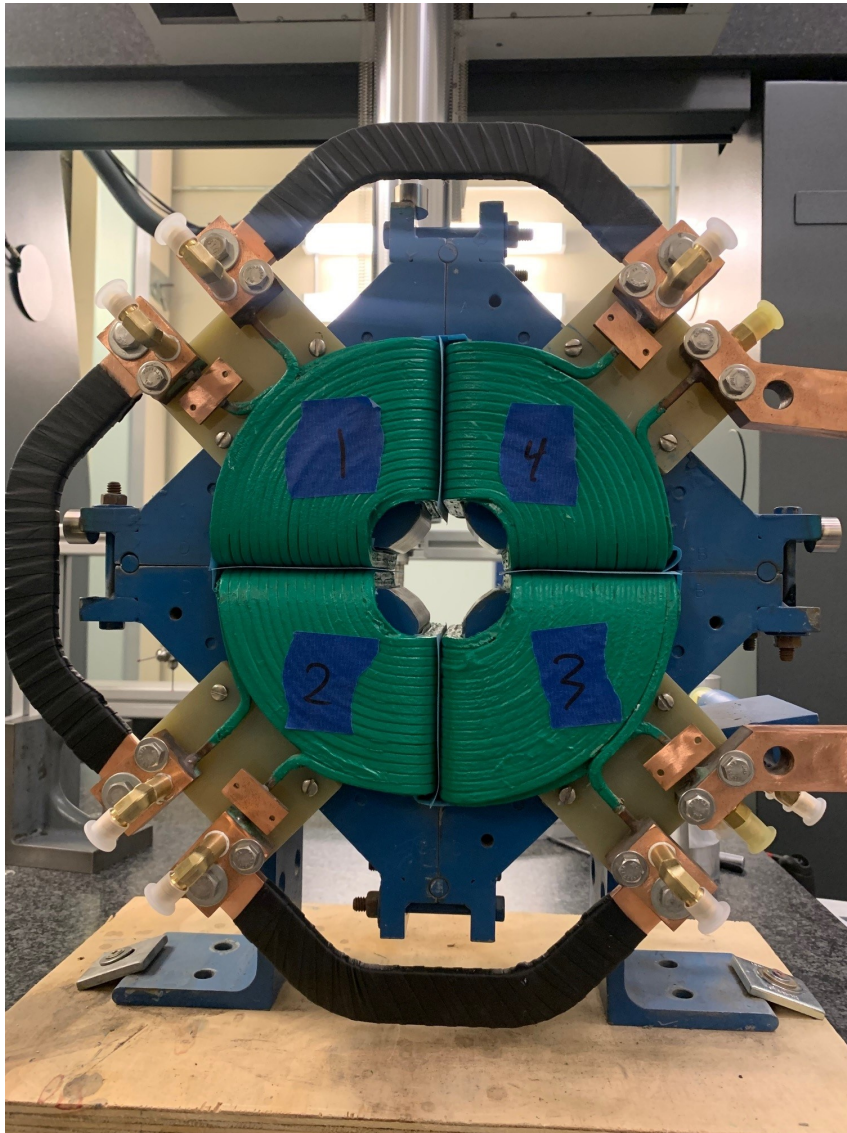
Pole Tip Deviations

Pole Tip	#1	#2	#3	#4
Min. Dev.	-0.0036	-0.0034	-0.0038	-0.003
Max. Dev.	0.0017	0.0012	0.0017	0.0009

Barcode # : 4262

Mfg. S/N : QDAS14

Angle of the Composite Pole Tip Best-Fit



in Decimal Degrees ° : -0.06066

Angle in Milliradians : -1.05871

Barcode # : 4262

Mfg. S/N : QDAS14