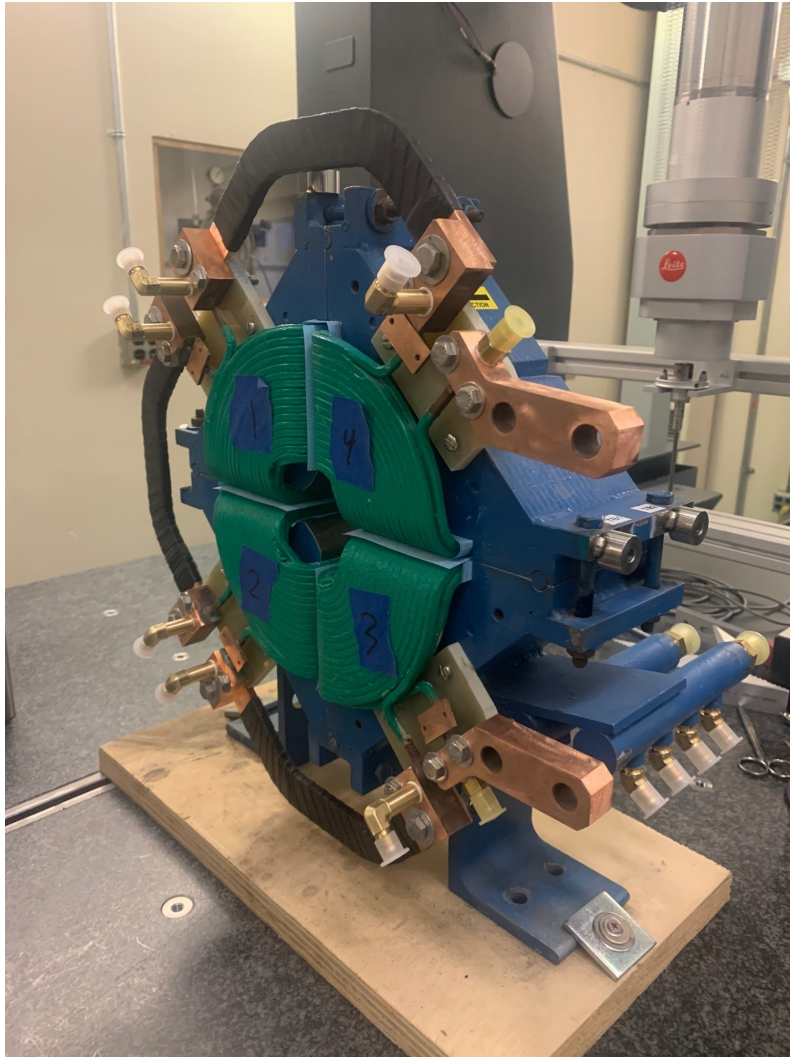


LCLS II 2Q4W Fiducialization Report

S30XL Refurb Quadrupole MFD FILE: 40395-5



Inspector : K. Caban
Engineer : A. Ibrahimov
Drawing No. : SA-344-112-18 R00
Barcode # :
Mfg. S/N : QDAS29

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.

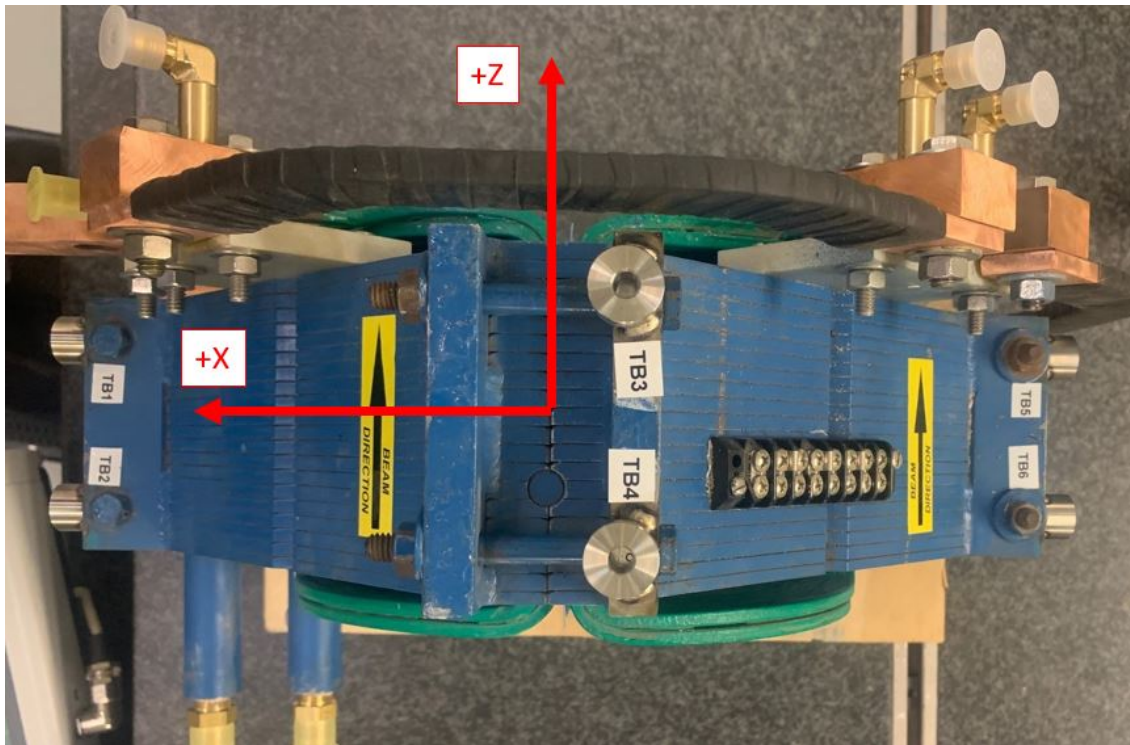
Coordinate Origins

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



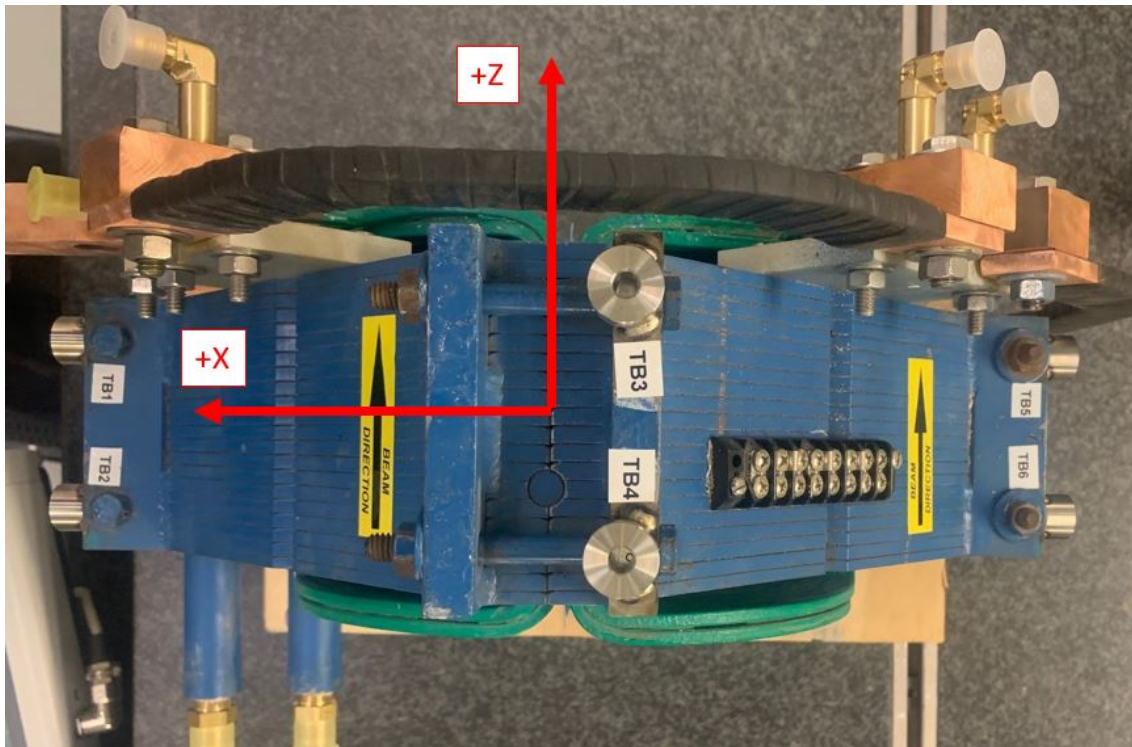
Tooling Ball	X Coord.	Y Coord.	Z Coord.
TB 1	9.0515	0.7668	1.3045
TB 2	9.0495	0.7902	-1.3099
TB 3	-0.8112	9.0517	1.2560
TB 4	-0.8003	9.0447	-1.3062
TB 5	-9.0448	0.7749	1.3057
TB 6	-9.0406	0.7788	-1.3239

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

Barcode # :

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Tooling Ball Locations



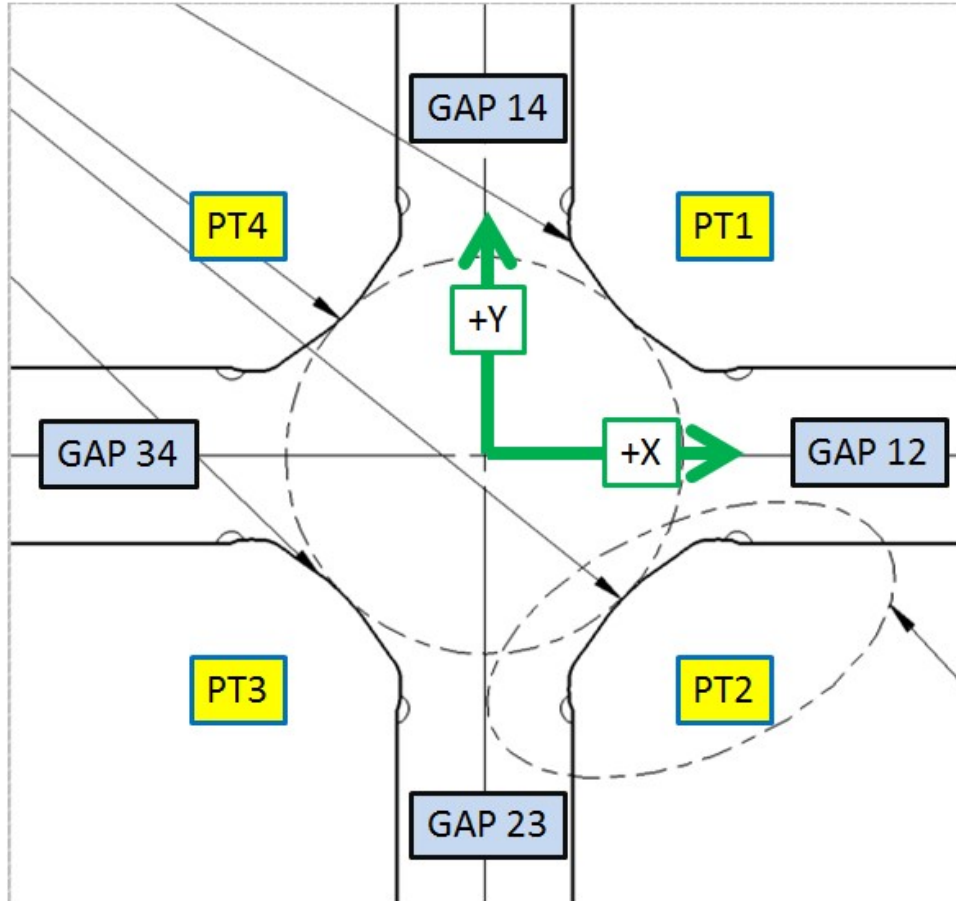
Tooling Ball	X Coord.	Y Coord.	Z Coord.
TB 1	8.3643	0.7736	1.3062
TB 2	8.3623	0.7937	-1.3090
TB 3	-0.7921	8.3652	1.2770
TB 4	-0.7942	8.3583	-1.3066
TB 5	-8.3578	0.7790	1.3061
TB 6	-8.3533	0.7816	-1.3230

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

Barcode # :

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Pole Tip Gap Measurements

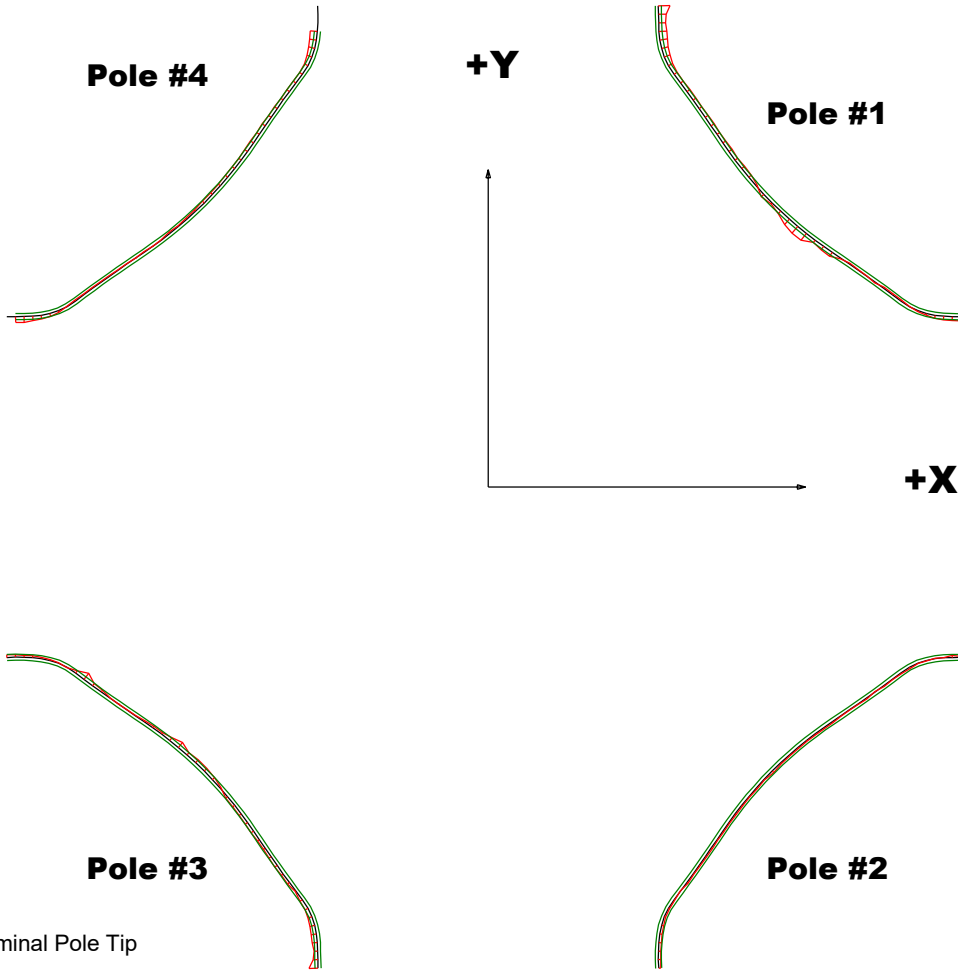


	Nominal Distance	Downstream Pole End	Upstream Pole End
PT Distance 1-3	2.026	2.0234	2.028
PT Distance 2-4	2.026	2.0274	2.0277
Gap 1-2	0.8602	0.8592	0.8594
Gap 2-3	0.8602	0.8607	0.8596
Gap 3-4	0.8602	0.8558	0.8576
Gap 1-4	0.8602	0.8643	0.857

Dimensions in Inch

Barcode # :
Mfg. S/N : QDAS29

Composite Best-fit of Pole Tips, Downstream



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

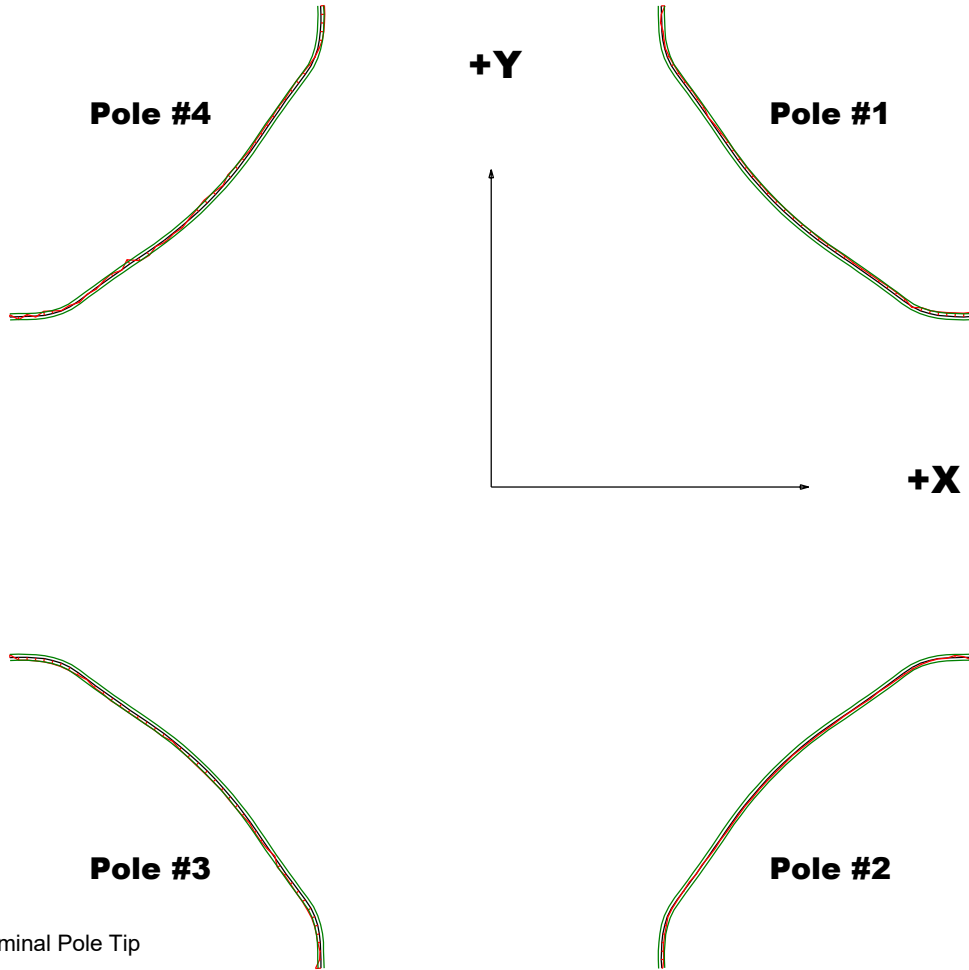
Dimensions in Inch

Pole Tip Deviations

Pole Tip	#1	#2	#3	#4
Min. Dev.	-0.0039	-0.0008	-0.003	-0.0024
Max. Dev.	0.0029	0.0007	0.0026	0.002

Barcode # :
Mfg. S/N : QDAS29

Composite Best-fit of Pole Tips, Upstream



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

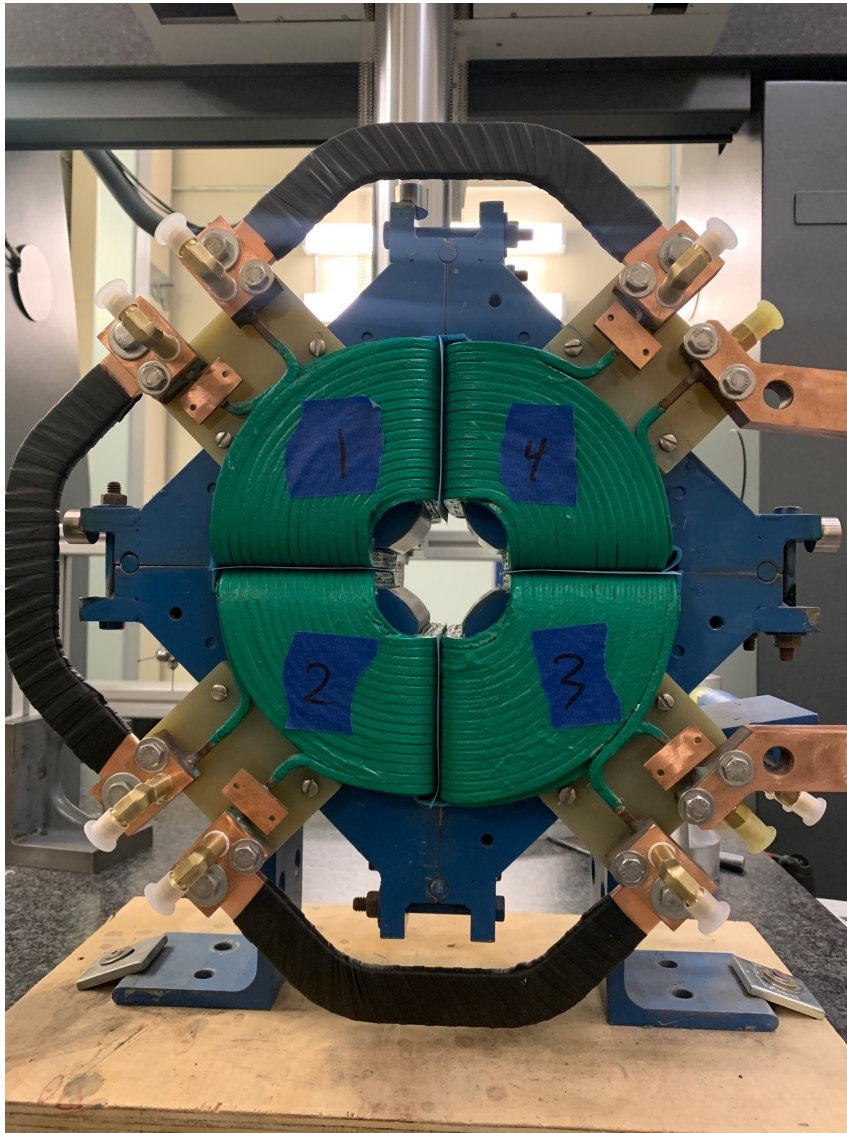
Dimensions in Inch

Pole Tip Deviations

Pole Tip	#1	#2	#3	#4
Min. Dev.	-0.0014	-0.001	-0.0019	-0.0017
Max. Dev.	0.0003	0.0007	0.0009	0.0013

Barcode # :
Mfg. S/N : QDAS29

Angle of the Composite Pole Tip Best-Fit



in Decimal Degrees ° : 0.01130

Angle in Milliradians : 0.19723

Barcode # :

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