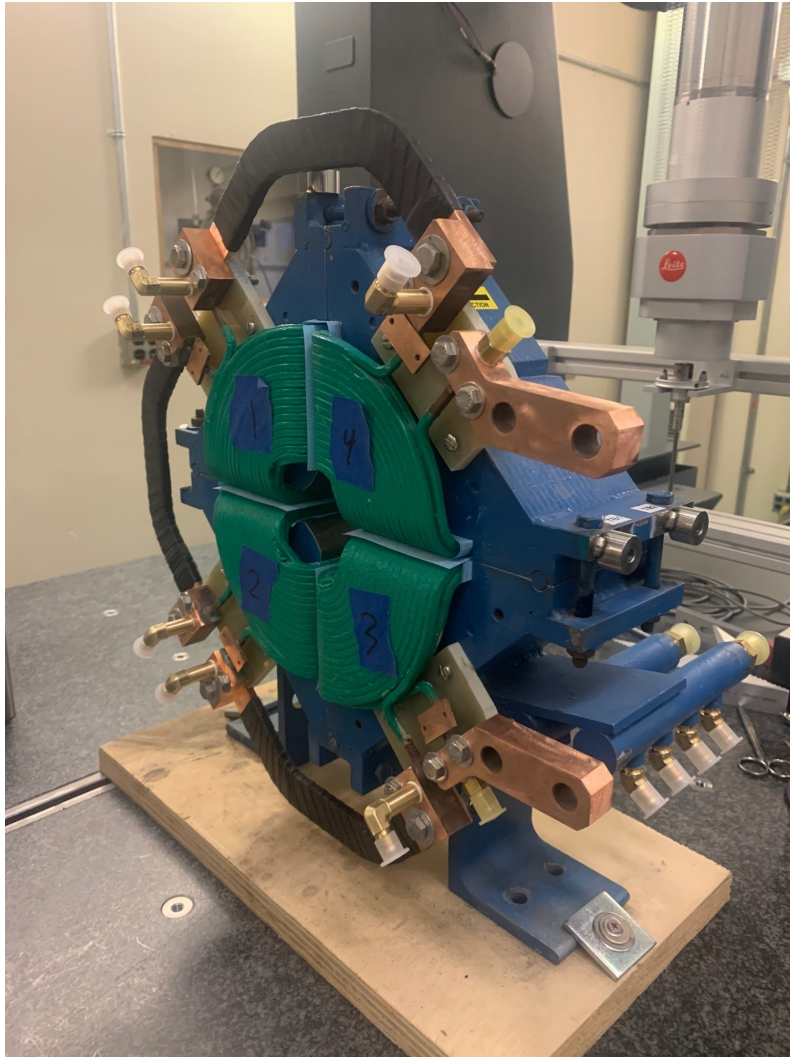


LCLS II 2Q4W Fiducialization Report

S30XL Refurb Quadrupole MFD FILE: 40395-5



Inspector : K. Caban
Engineer : A. Ibrahimov
Drawing No. : SA-344-112-18 R00
Barcode # :
Mfg. S/N : QDAS15

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.

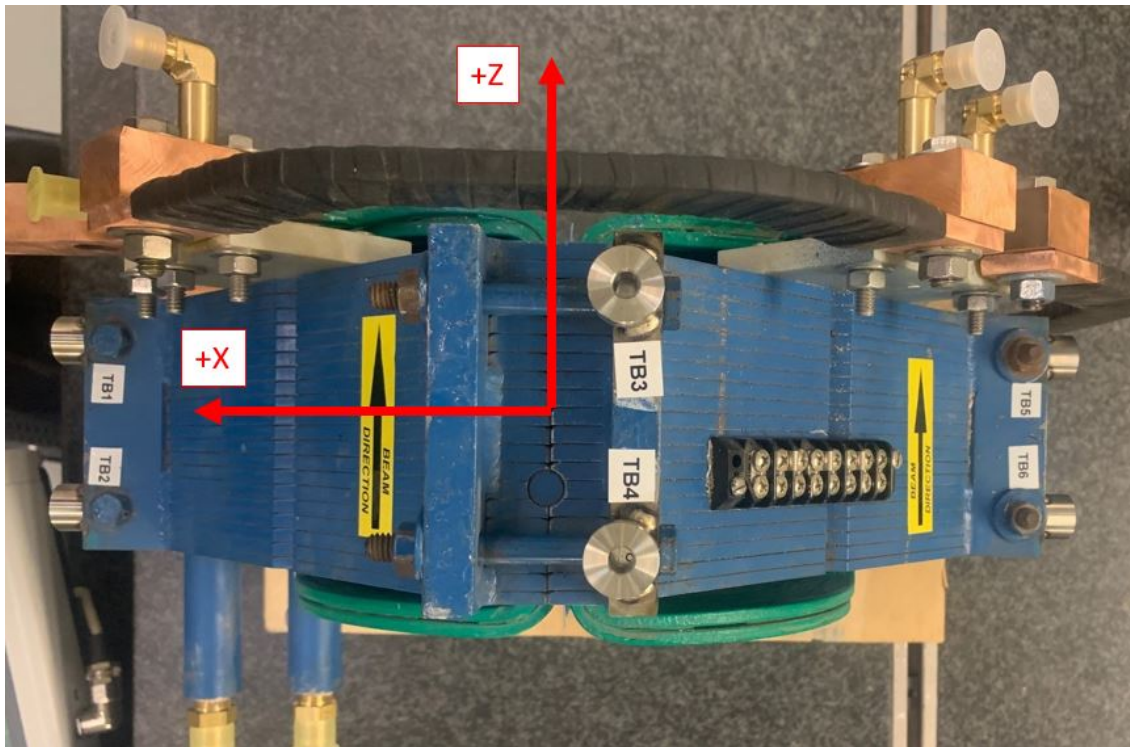
Coordinate Origins

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.

Barcode # :

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Tooling Ball Locations



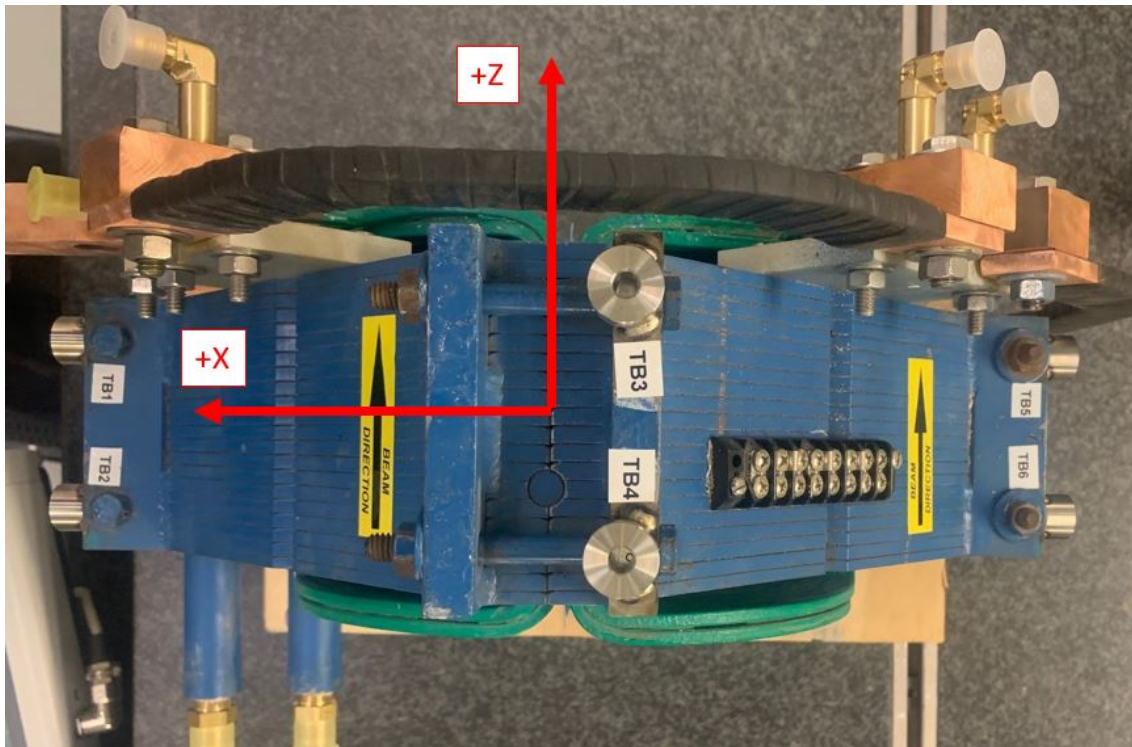
Tooling Ball	X Coord.	Y Coord.	Z Coord.
TB 1	9.0505	0.8160	1.3032
TB 2	9.0518	0.8009	-1.3119
TB 3	-0.8164	9.0403	1.3334
TB 4	-0.8026	9.0388	-1.3222
TB 5	-9.0532	0.7743	1.3094
TB 6	-9.0499	0.7731	-1.3101

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

Barcode # :

Mfg. S/N : QDAS15

Tooling Ball Locations



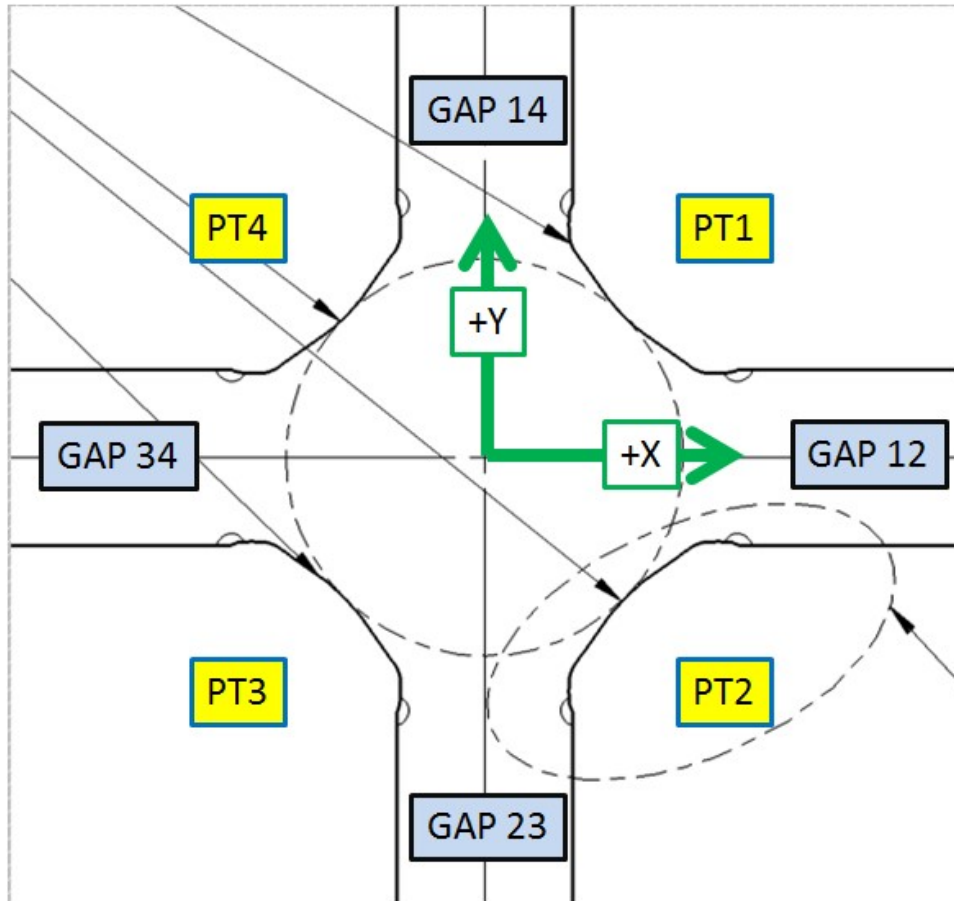
Tooling Ball	X Coord.	Y Coord.	Z Coord.
TB 1	8.3640	0.8167	1.3017
TB 2	8.3649	0.8057	-1.3121
TB 3	-0.8104	8.3535	1.3347
TB 4	-0.8034	8.3515	-1.3220
TB 5	-8.3663	0.7798	1.3089
TB 6	-8.3631	0.7857	-1.3102

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

Barcode # :

Mfg. S/N : QDAS15

Pole Tip Gap Measurements

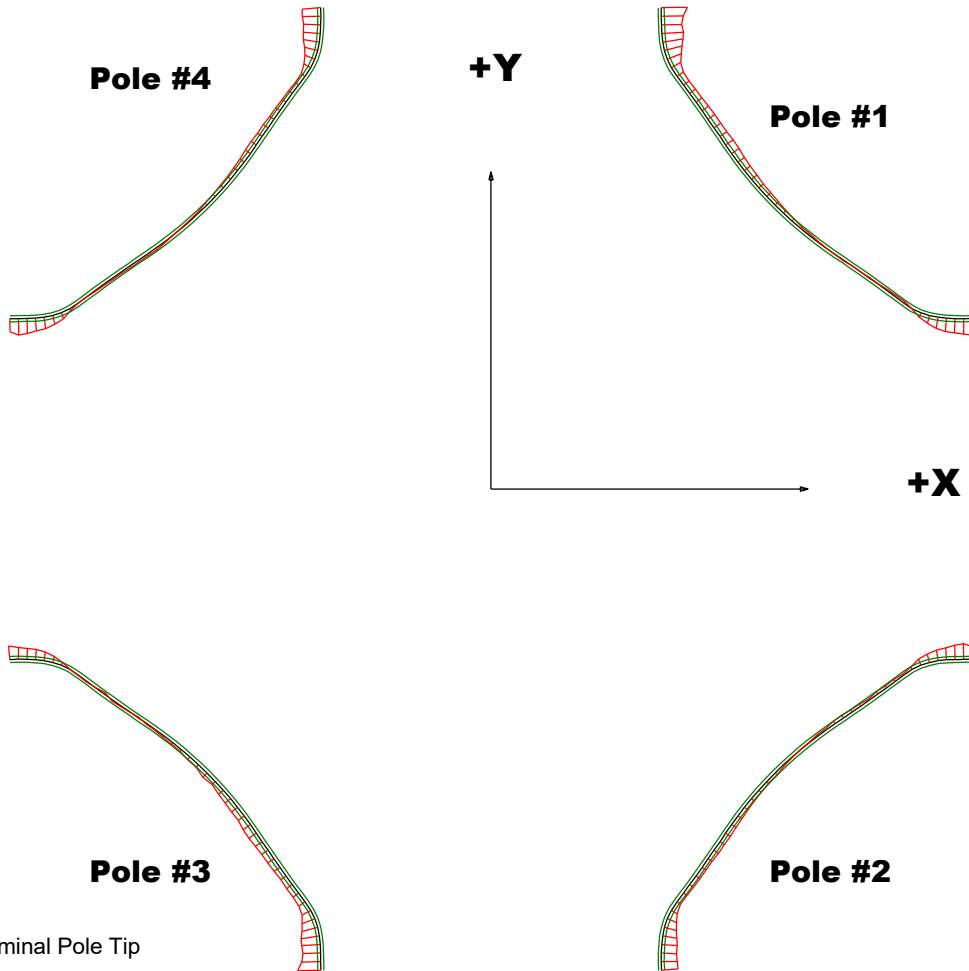


	Nominal Distance	Downstream Pole End	Upstream Pole End
PT Distance 1-3	2.026	2.0294	2.027
PT Distance 2-4	2.026	2.0276	2.0309
Gap 1-2	0.8602	0.8493	0.8492
Gap 2-3	0.8602	0.8697	0.8738
Gap 3-4	0.8602	0.782	0.8474
Gap 1-4	0.8602	0.8713	0.8704

Dimensions in Inch

Barcode # :
Mfg. S/N : QDAS15

Composite Best-fit of Pole Tips, Downstream



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

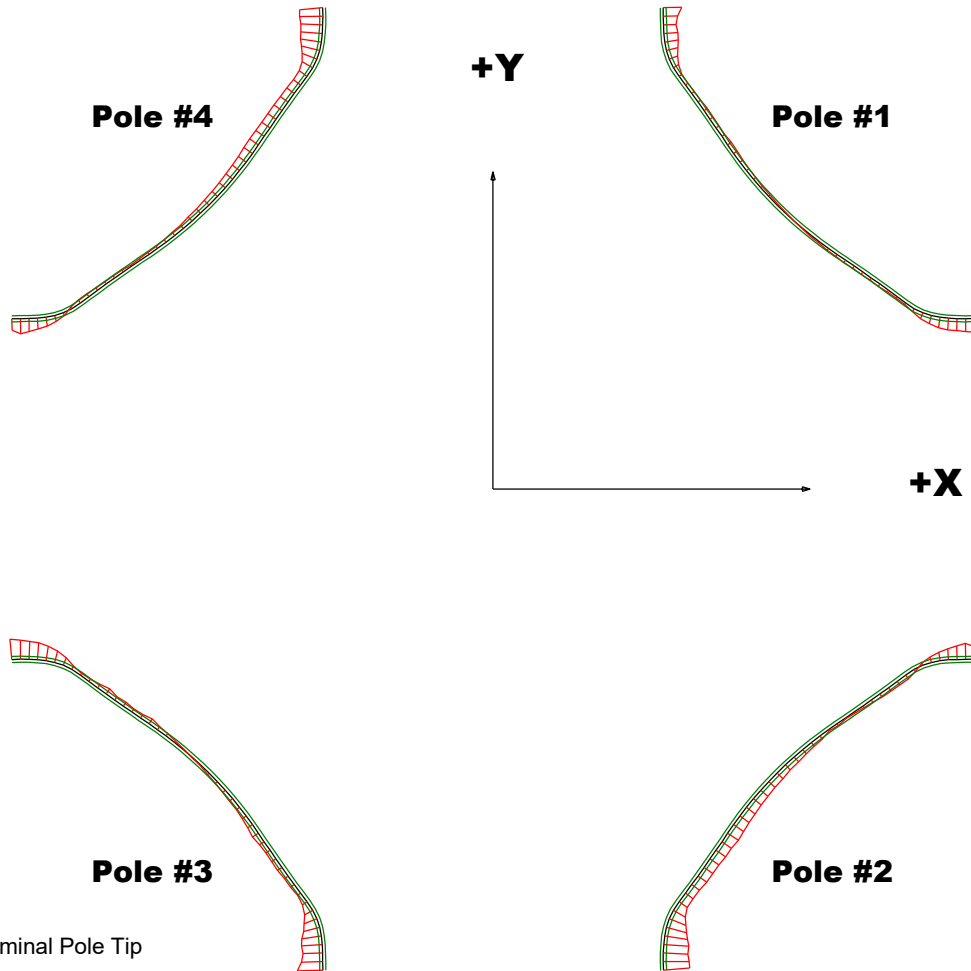
Dimensions in Inch

Pole Tip Deviations

Pole Tip	#1	#2	#3	#4
Min. Dev.	-0.0087	-0.0055	-0.0077	-0.0062
Max. Dev.	0.0057	0.0052	0.0045	0.0055

Barcode # :
Mfg. S/N : QDAS15

Composite Best-fit of Pole Tips, Upstream



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

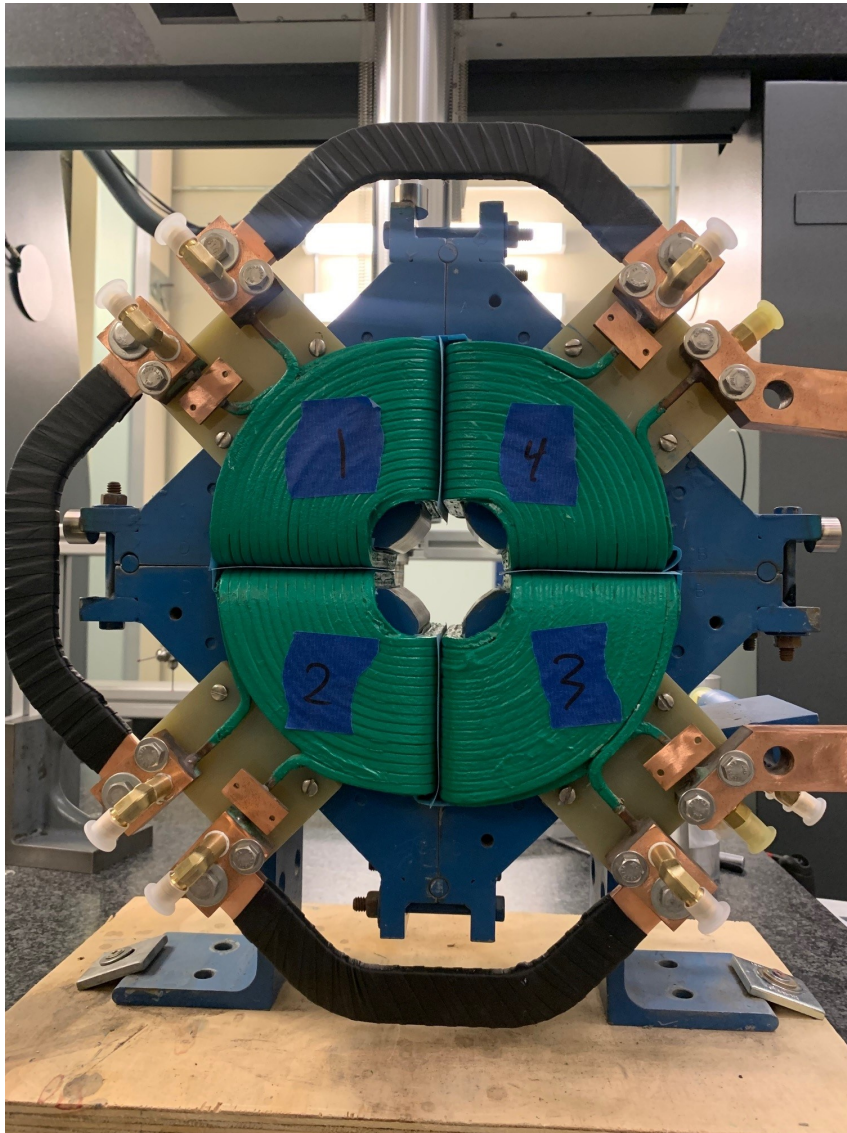
Dimensions in Inch

Pole Tip Deviations

Pole Tip	#1	#2	#3	#4
Min. Dev.	-0.0062	-0.0087	-0.0085	-0.0077
Max. Dev.	0.0046	0.0053	0.0067	0.005

Barcode # :
Mfg. S/N : QDAS15

Angle of the Composite Pole Tip Best-Fit



in Decimal Degrees ° : -0.00589

Angle in Milliradians : -0.10275

Barcode # :

Mfg. S/N : QDAS15