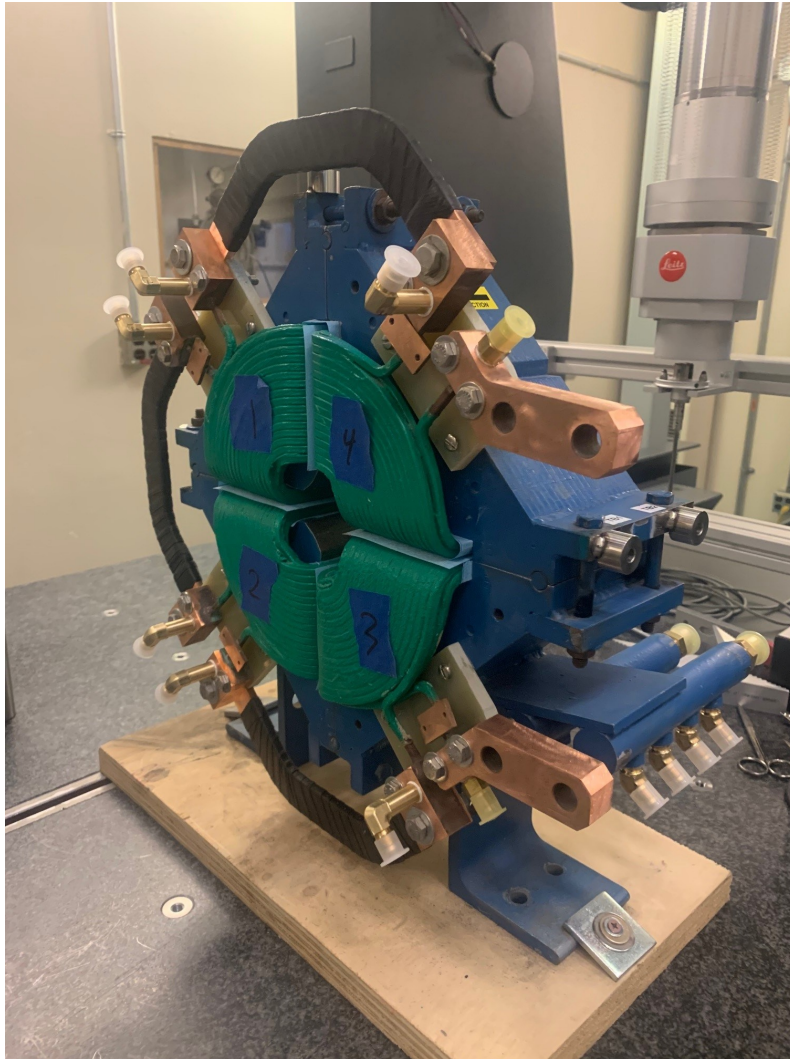


LCLS II 2Q4W Fiducialization Report

S30XL Refurb Quadrupole MFD FILE: 40395-5



Inspector : K. Caban
Engineer : A. Ibrahimov
Drawing No. : SA-344-112-18 R00
Barcode # :
Mfg. S/N : QDAS17

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.

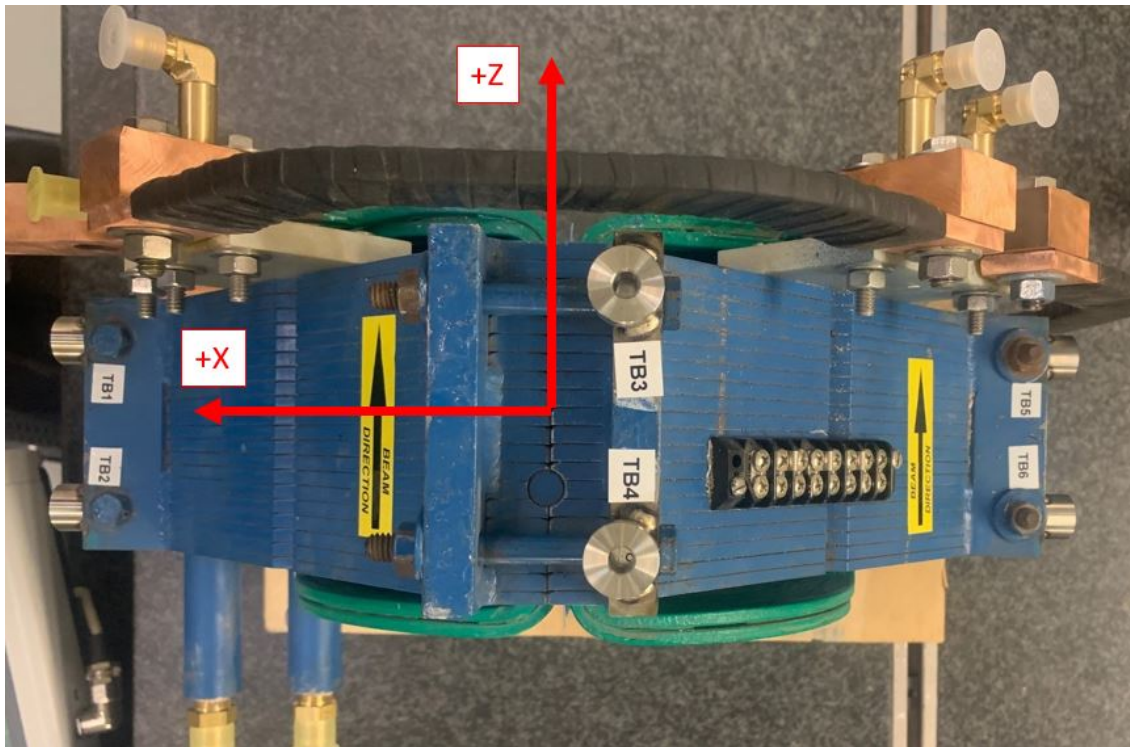
Coordinate Origins

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



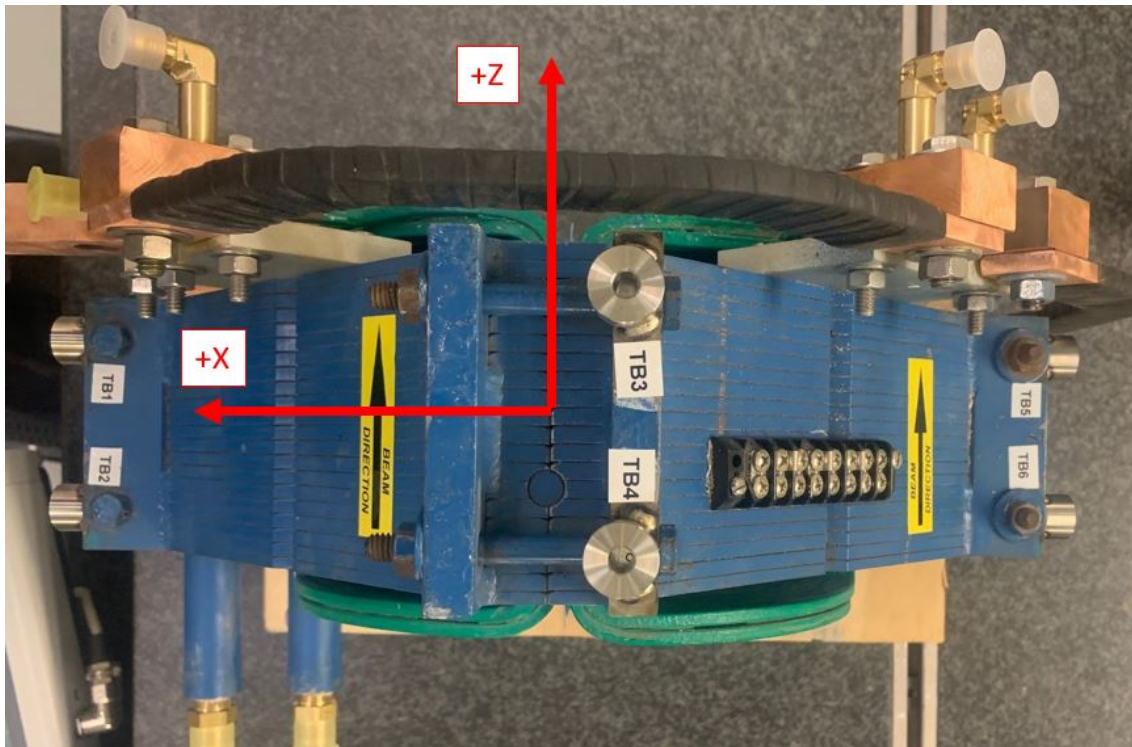
Tooling Ball	X Coord.	Y Coord.	Z Coord.
TB 1	9.0479	0.8387	1.3103
TB 2	9.0524	0.8341	-1.3090
TB 3	-0.8054	9.0453	1.3077
TB 4	-0.7882	9.0510	-1.3100
TB 5	-8.3091	0.8254	1.3229
TB 6	-8.3018	0.8386	-1.3096

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

Barcode # :

Mfg. S/N : QDAS17

Tooling Ball Locations



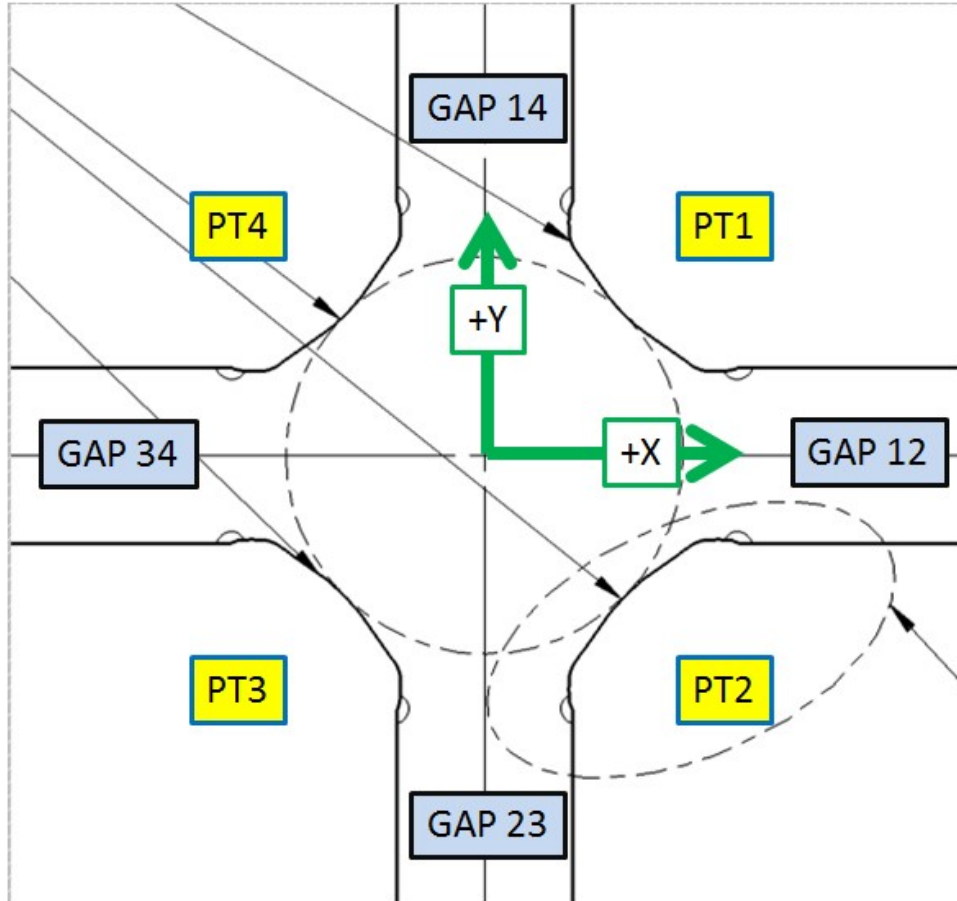
Tooling Ball	X Coord.	Y Coord.	Z Coord.
TB 1	8.3605	0.8309	1.3080
TB 2	8.3656	0.8273	-1.3101
TB 3	-0.8062	8.3586	1.3091
TB 4	-0.7889	8.3642	-1.3102
TB 5	-7.6220	0.8120	1.3231
TB 6	-7.6150	0.8280	-1.3038

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

Barcode # :

Mfg. S/N : QDAS17

Pole Tip Gap Measurements

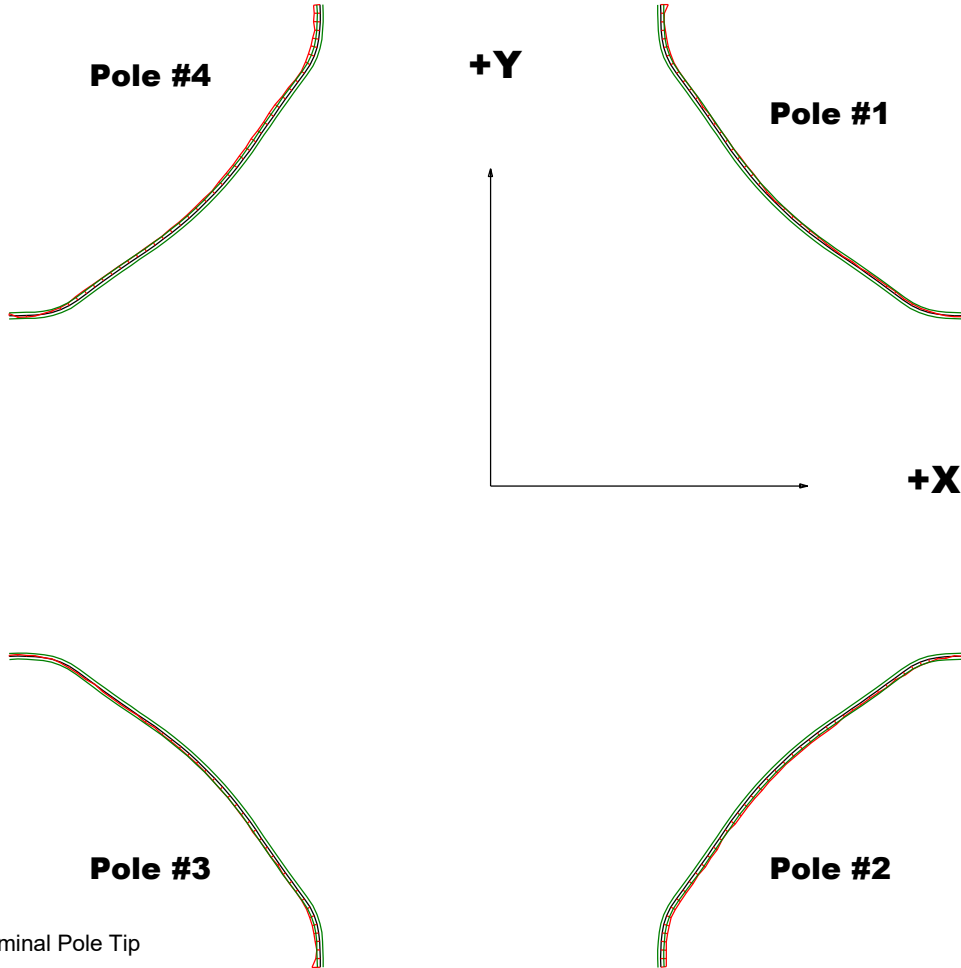


	Nominal Distance	Downstream Pole End	Upstream Pole End
PT Distance 1-3	2.026	2.0271	2.029
PT Distance 2-4	2.026	2.0289	2.0279
Gap 1-2	0.8602	0.8585	0.8576
Gap 2-3	0.8602	0.8614	0.863
Gap 3-4	0.8602	0.8571	0.8539
Gap 1-4	0.8602	0.8617	0.8618

Dimensions in Inch

Barcode # :
Mfg. S/N : QDAS17

Composite Best-fit of Pole Tips, Downstream



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

Dimensions in Inch

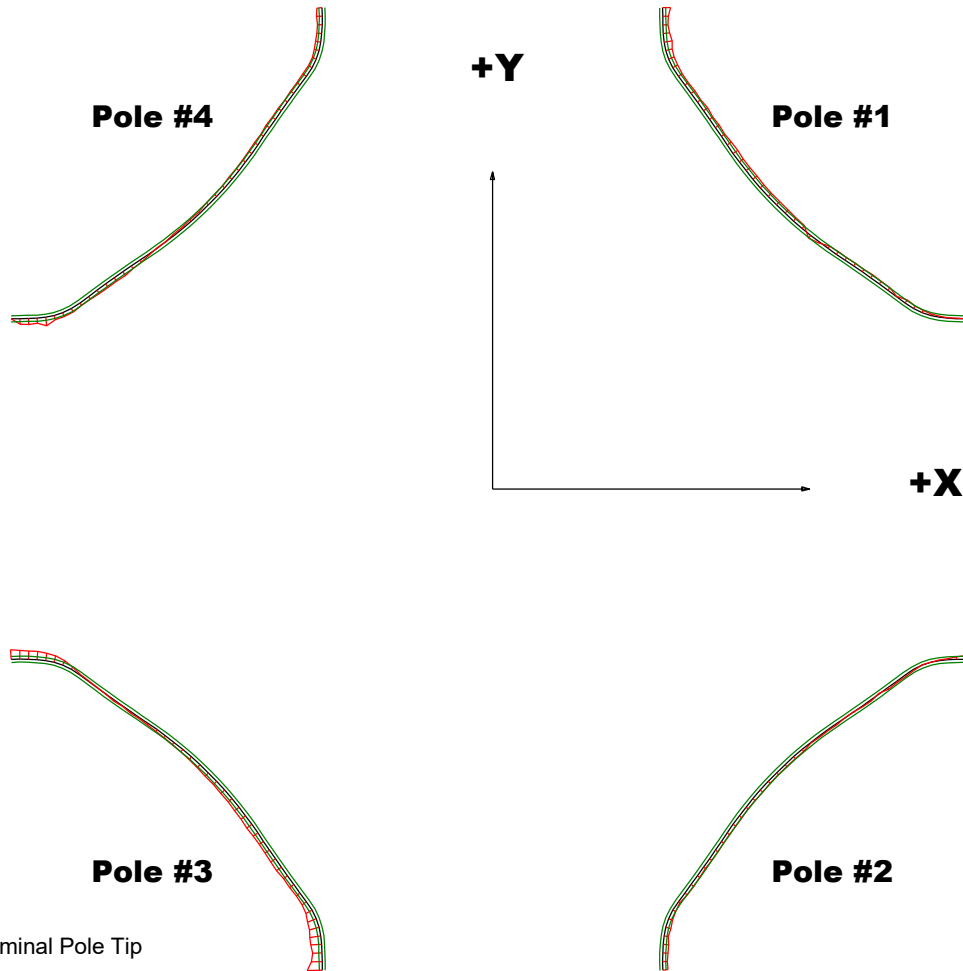
Pole Tip Deviations

Pole Tip	#1	#2	#3	#4
Min. Dev.	-0.0026	-0.0019	-0.0028	-0.0021
Max. Dev.	0.0004	0.0002	0.0006	0.0006

Barcode # :

Mfg. S/N : QDAS17

Composite Best-fit of Pole Tips, Upstream



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

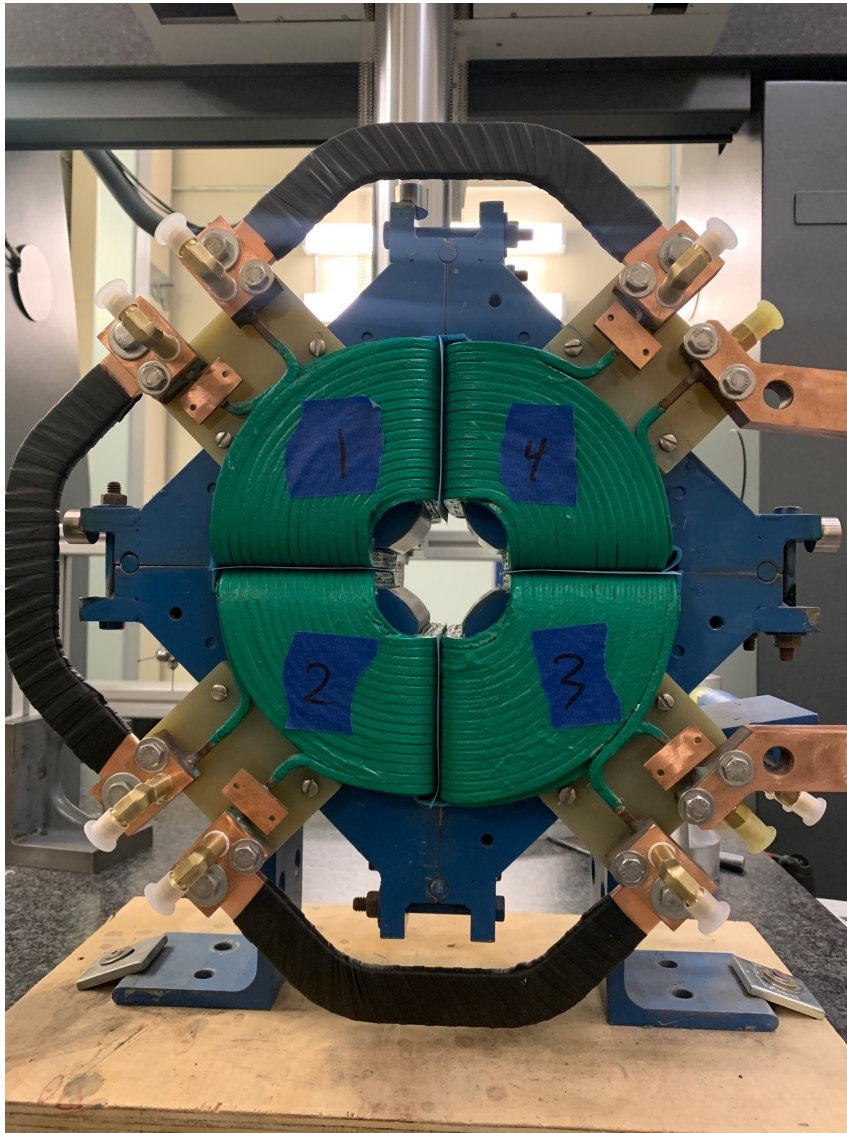
Dimensions in Inch

Pole Tip Deviations

Pole Tip	#1	#2	#3	#4
Min. Dev.	-0.0027	-0.0018	-0.005	-0.0019
Max. Dev.	0.0012	0.0011	0.0032	0.0028

Barcode # :
Mfg. S/N : QDAS17

Angle of the Composite Pole Tip Best-Fit



in Decimal Degrees ° : 0.02046

Angle in Milliradians : 0.35701

Barcode # :

Mfg. S/N : QDAS17