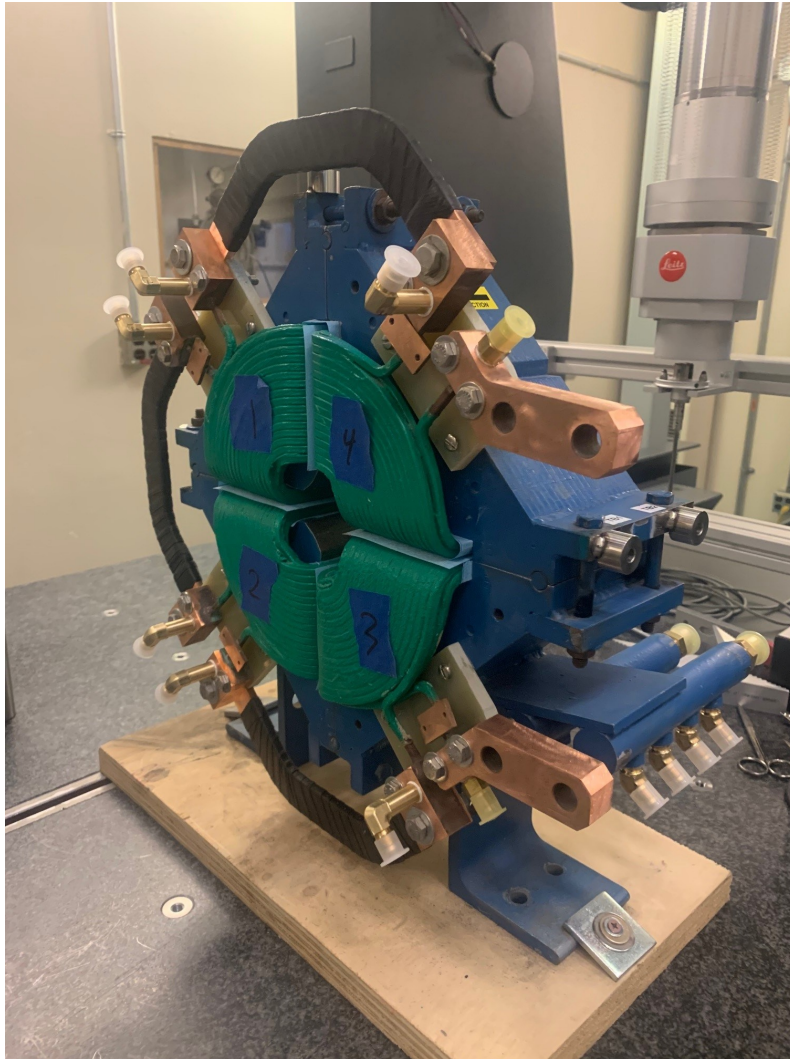


LCLS II 2Q4W Fiducialization Report

S30XL Refurb Quadrupole MFD FILE: 40395-5



Inspector : K. Caban
Engineer : A. Ibrahimov
Drawing No. : SA-344-112-18 R00
Barcode # :
Mfg. S/N : QMR4

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.

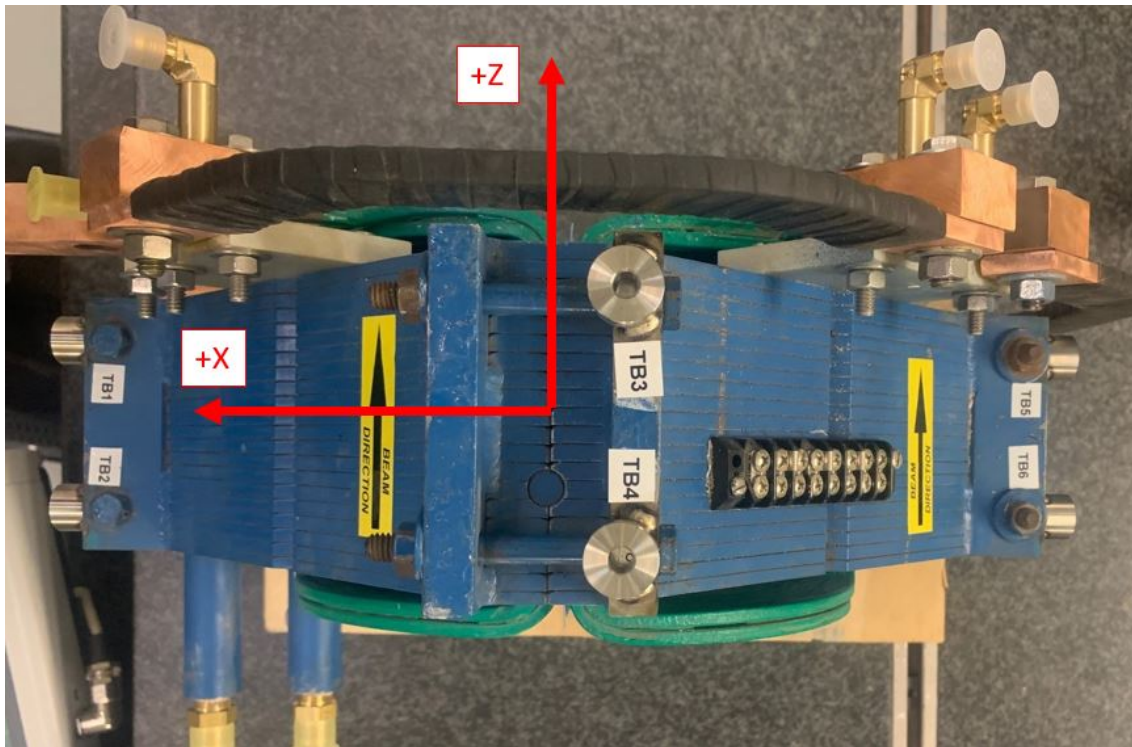
Coordinate Origins

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



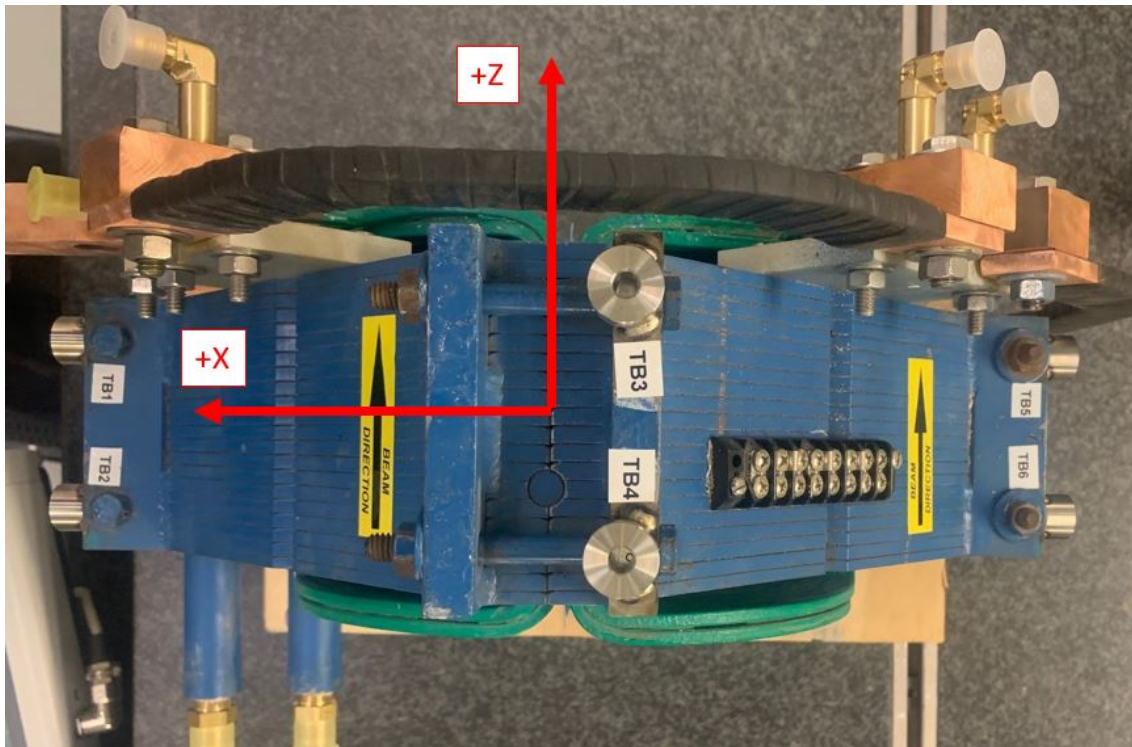
Tooling Ball	X Coord.	Y Coord.	Z Coord.
TB 1	9.0483	0.7856	1.2908
TB 2	9.0596	0.8195	-1.2874
TB 3	-0.7988	9.0519	1.2889
TB 4	-0.8162	9.0498	-1.2868
TB 5	-9.0464	0.7874	1.3061
TB 6	-9.0450	0.7743	-1.3082

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

Barcode # :

Mfg. S/N : QMR4

Tooling Ball Locations



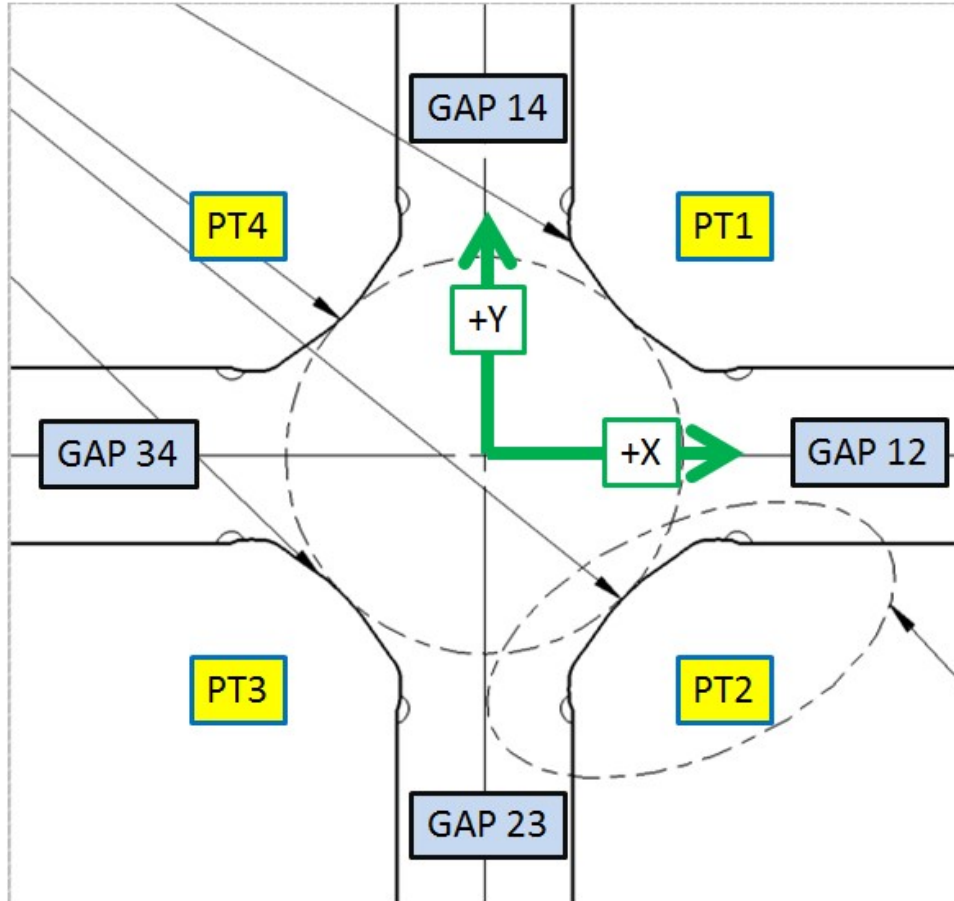
Tooling Ball	X Coord.	Y Coord.	Z Coord.
TB 1	8.3611	0.7877	1.2918
TB 2	8.3726	0.8098	-1.3114
TB 3	-0.7975	8.3645	1.2914
TB 4	-0.8131	8.3629	-1.2840
TB 5	-8.3593	0.7919	1.3051
TB 6	-8.3578	0.7790	-1.3069

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

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Pole Tip Gap Measurements



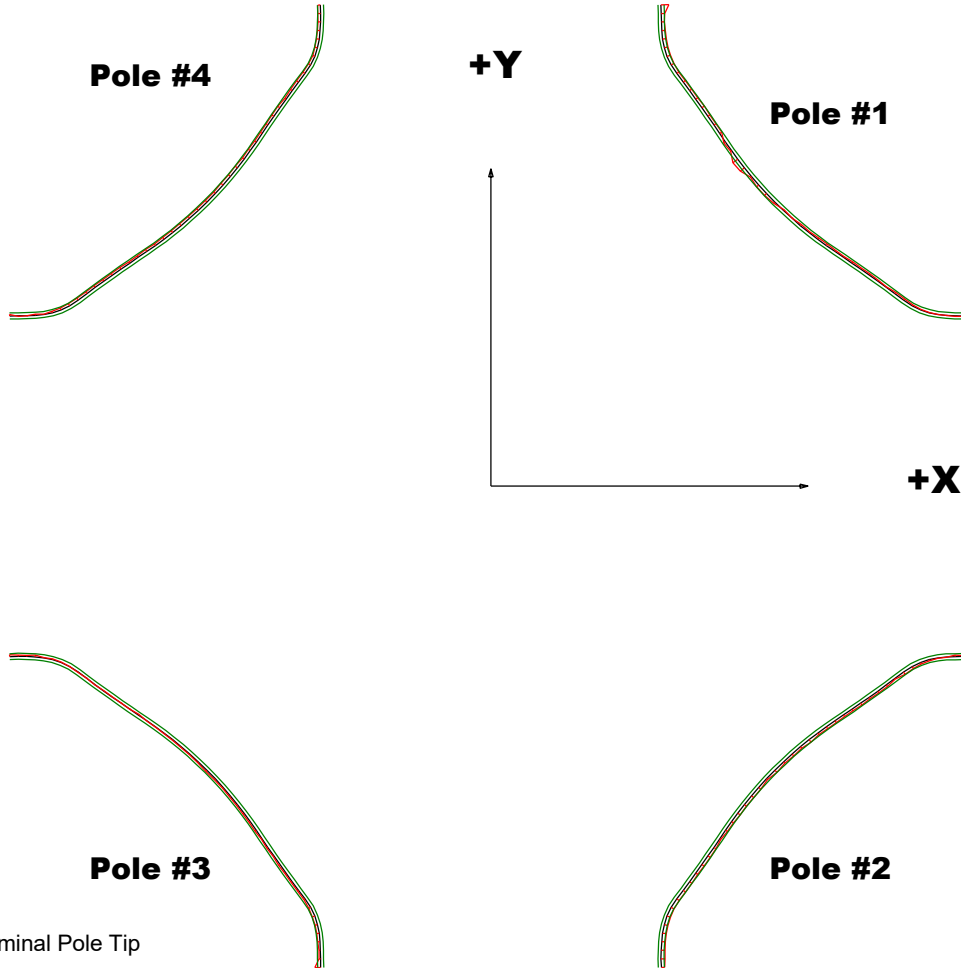
	Nominal Distance	Downstream Pole End	Upstream Pole End
PT Distance 1-3	2.026	2.0257	2.0274
PT Distance 2-4	2.026	2.0264	2.0279
Gap 1-2	0.8602	0.8576	0.8575
Gap 2-3	0.8602	0.86	0.8625
Gap 3-4	0.8602	0.8577	0.8555
Gap 1-4	0.8602	0.8604	0.7704

Dimensions in Inch

Barcode # :

Mfg. S/N : QMR4

Composite Best-fit of Pole Tips, Downstream



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

Dimensions in Inch

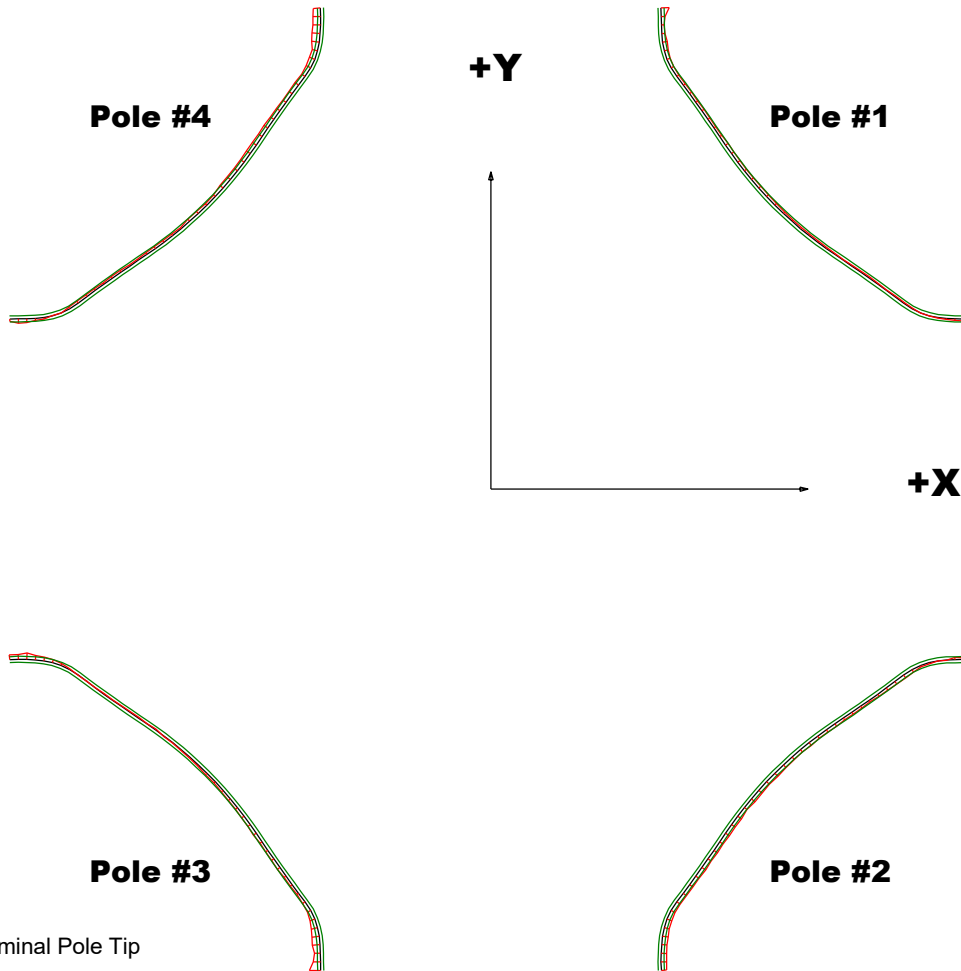
Pole Tip Deviations

Pole Tip	#1	#2	#3	#4
Min. Dev.	-0.0026	-0.0013	-0.002	-0.001
Max. Dev.	0.002	0.0005	0.0007	0.0002

Barcode # :

Mfg. S/N : QMR4

Composite Best-fit of Pole Tips, Upstream



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

Dimensions in Inch

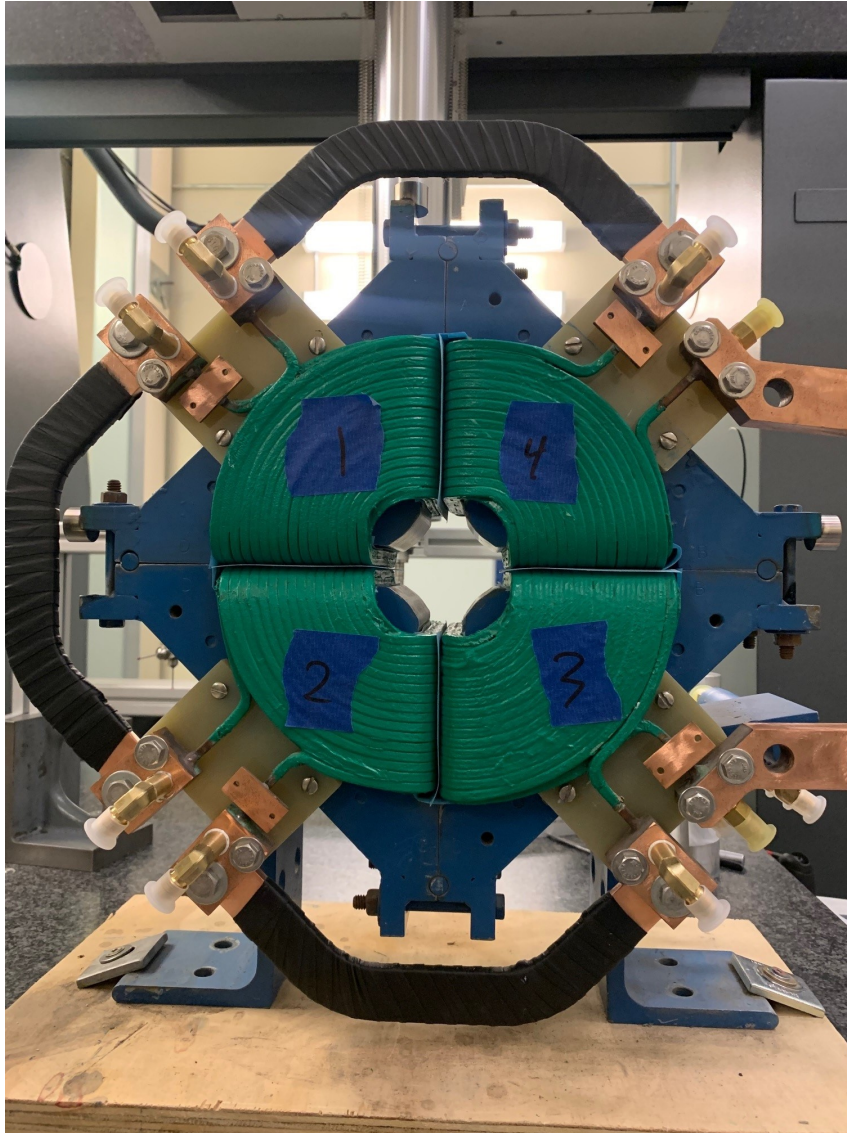
Pole Tip Deviations

Pole Tip	#1	#2	#3	#4
Min. Dev.	-0.0027	-0.0019	-0.0037	-0.0027
Max. Dev.	0.0012	0.0007	0.0021	0.0015

Barcode # :

Mfg. S/N : QMR4

Angle of the Composite Pole Tip Best-Fit



in Decimal Degrees ° : 0.00504

Angle in Milliradians : 0.08801

Barcode # :

Mfg. S/N : QMR4