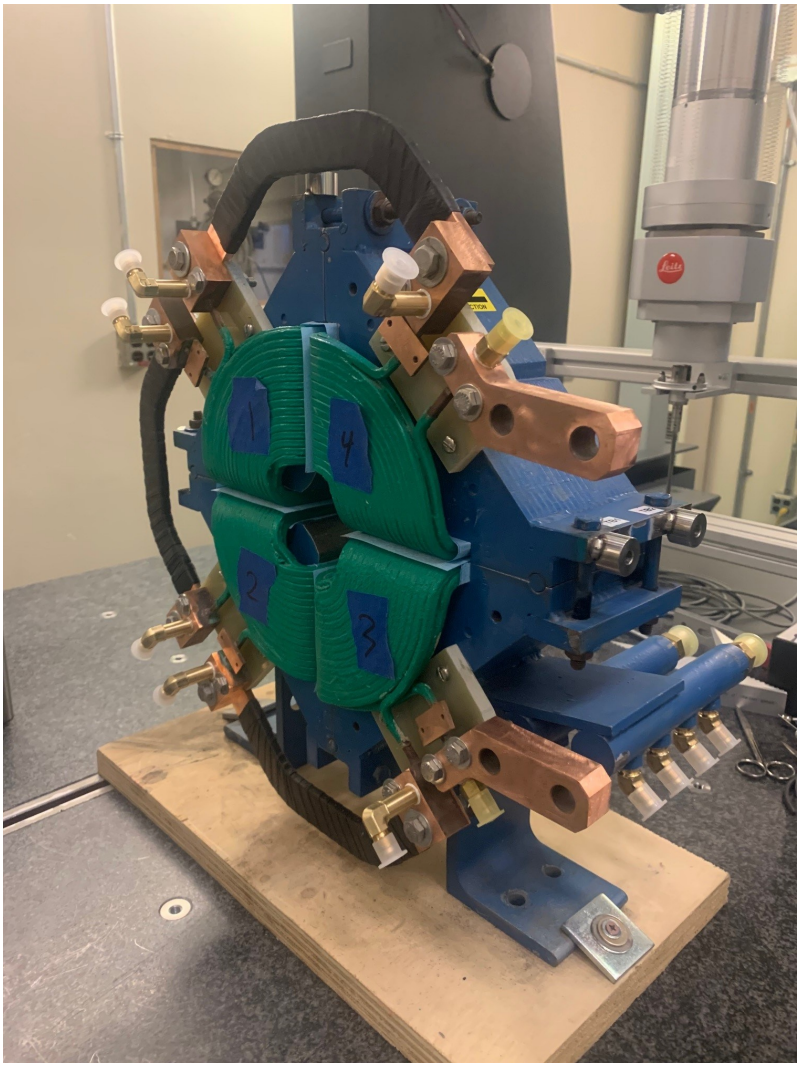
LCLS II 2Q4W Fiducialization Report

S30XL Refurb Quadrupole MFD FILE: 40395-5



Inspector : K. Caban

Engineer : A. Ibrahimov

Drawing No. : SA-344-112-18 R00

Barcode # :

Mfg. S/N : QDAS13

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.

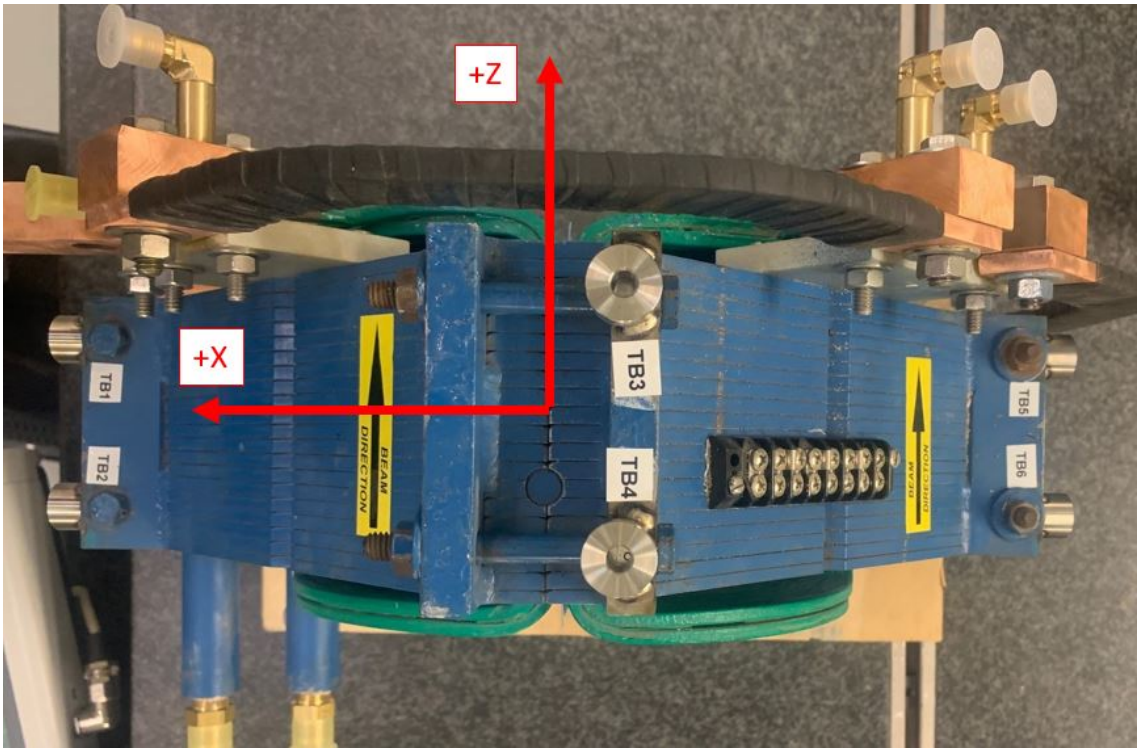
Coordinate Origins

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 # :

Mfg. S/N : QDAS13

Tooling Ball Locations



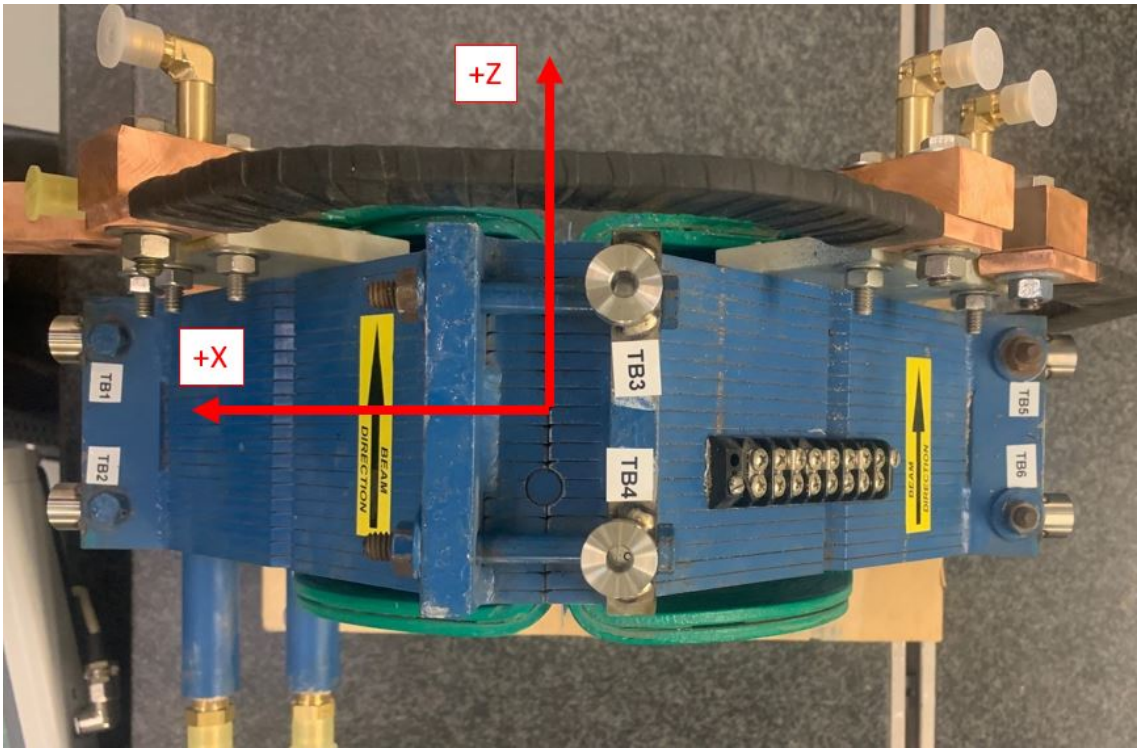
Tooling Ball	X Coord.	Y Coord.	Z Coord.
TB 1	9.0520	0.7884	1.3034
TB 2	9.0529	0.7846	-1.3175
TB 3	-0.8197	9.0378	1.3201
TB 4	-0.8227	9.0352	-1.3042
TB 5	-9.0517	0.7777	1.3150
TB 6	-9.0507	0.7930	-1.3111

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

Barcode # :

Mfg. S/N : QDAS13

Tooling Ball Locations



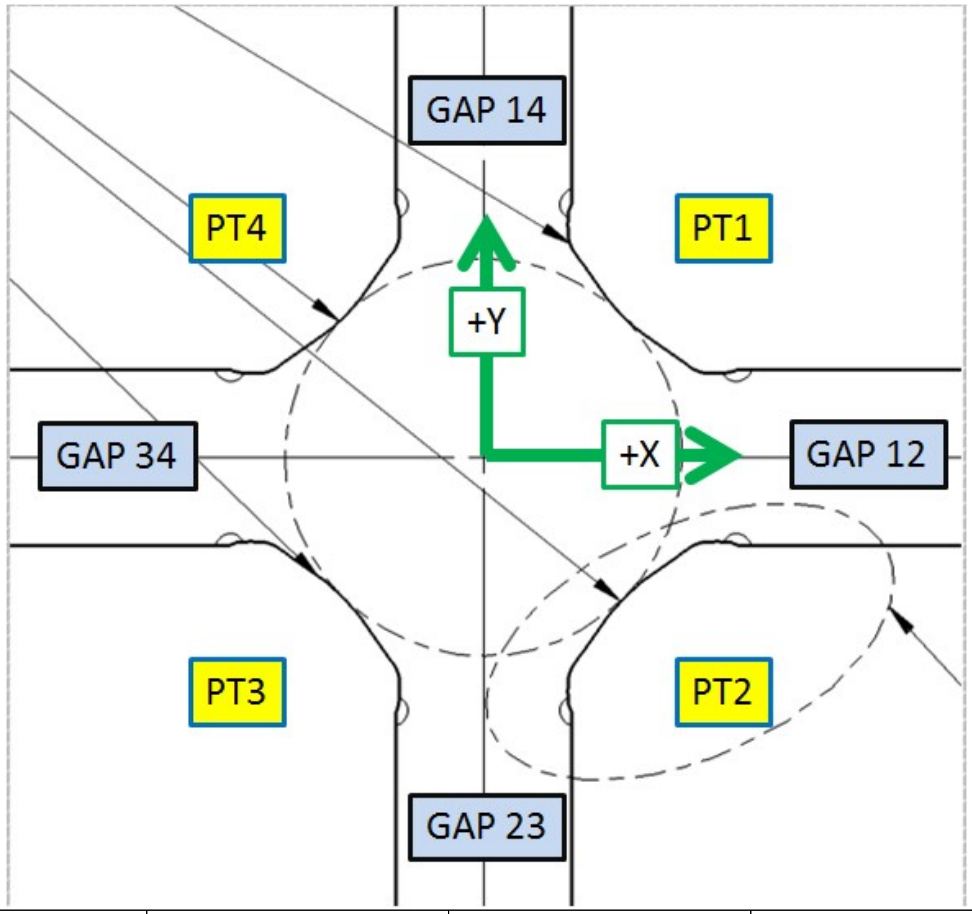
Tooling Ball	X Coord.	Y Coord.	Z Coord.
TB 1	8.3648	0.7916	1.3040
TB 2	8.3653	0.7872	-1.3176
TB 3	-0.8100	8.3508	1.3176
TB 4	-0.8125	8.3482	-1.3031
TB 5	-8.3642	0.7798	1.3164
TB 6	-8.3634	0.7954	-1.3099

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

Barcode # :

Mfg. S/N : QDAS13

Pole Tip Gap Measurements



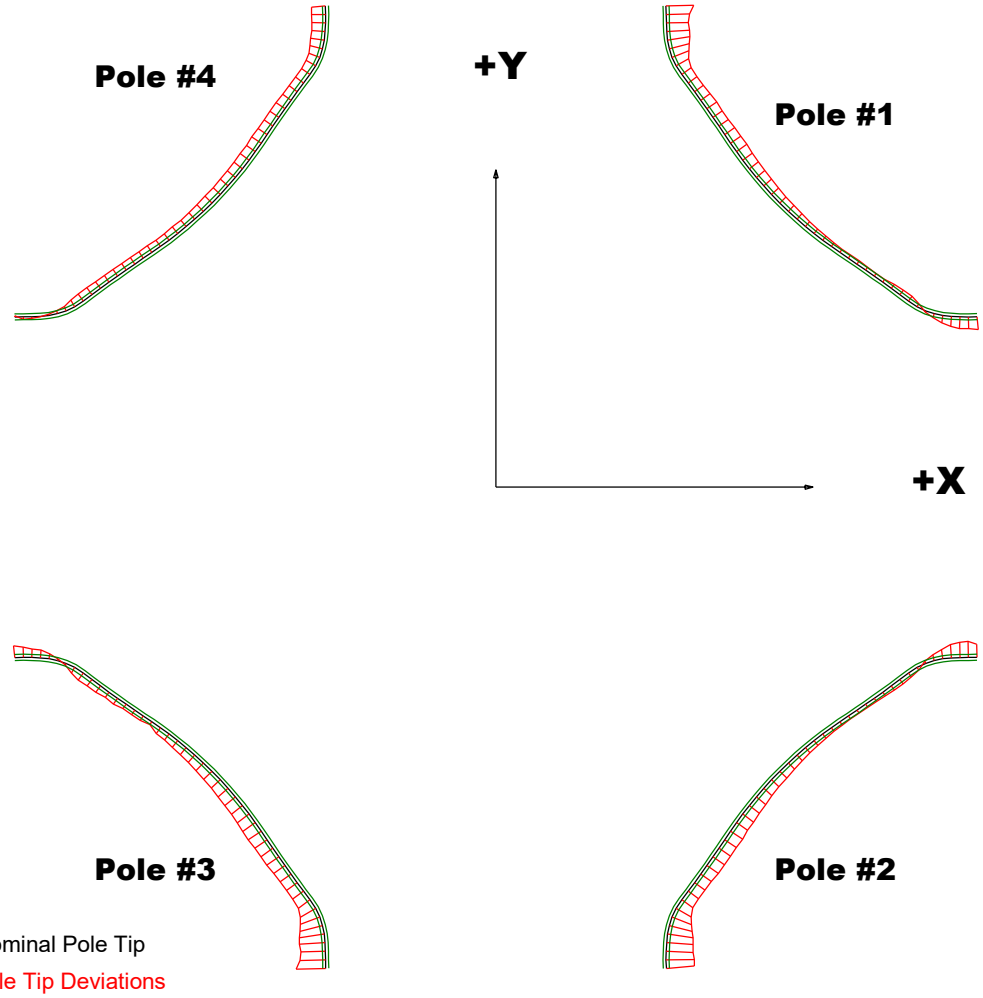
	Nominal Distance	Downstream Pole End	Upstream Pole End
PT Distance 1-3	2.026	2.0327	2.0334
PT Distance 2-4	2.026	2.0325	2.029
Gap 1-2	0.8602	0.8529	0.8535
Gap 2-3	0.8602	0.8761	0.8703
Gap 3-4	0.8602	0.8544	0.8571
Gap 1-4	0.8602	0.8705	0.8658

Dimensions in Inch

Barcode # :

Mfg. S/N : QDAS13

Composite Best-fit of Pole Tips, Downstream



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

Dimensions in Inch

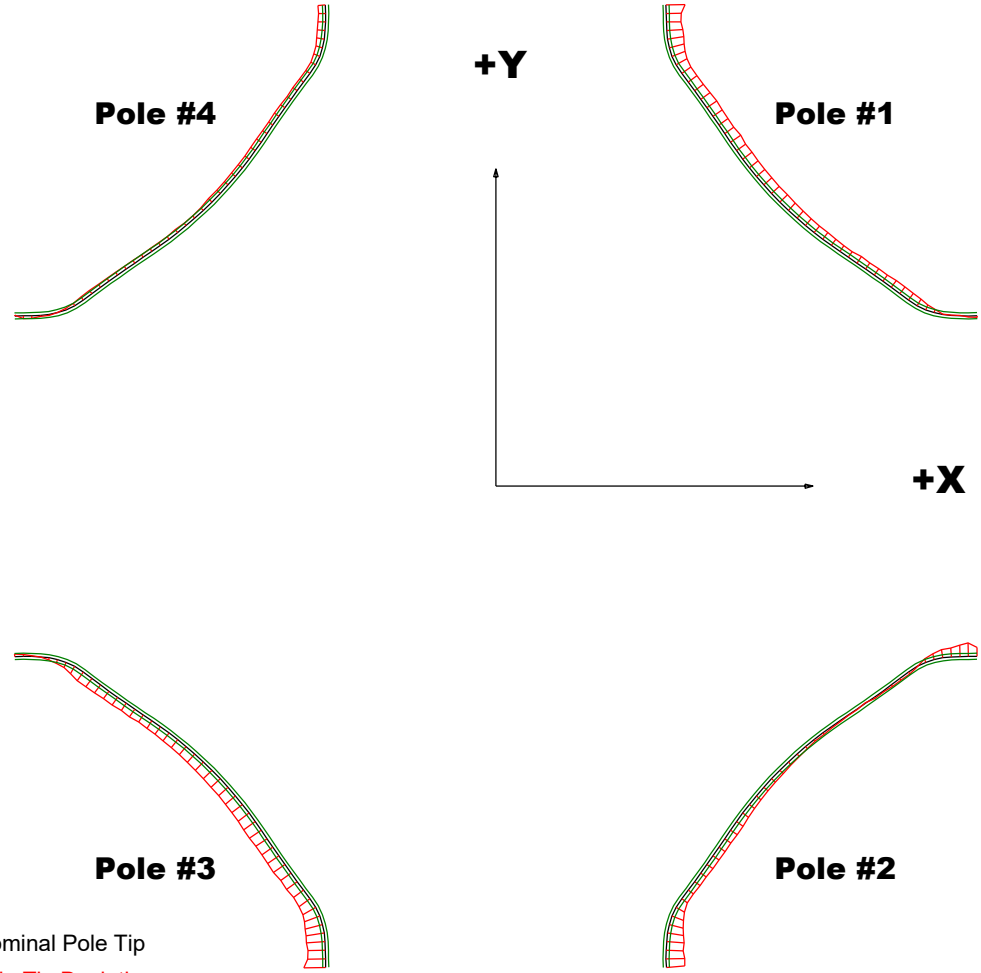
Pole Tip Deviations

Pole Tip	#1	#2	#3	#4
Min. Dev.	-0.0091	-0.0094	-0.0098	-0.0047
Max. Dev.	0.0043	0.0053	0.0039	0.0009

Barcode # :

Mfg. S/N : QDAS13

Composite Best-fit of Pole Tips, Upstream



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

Dimensions in Inch

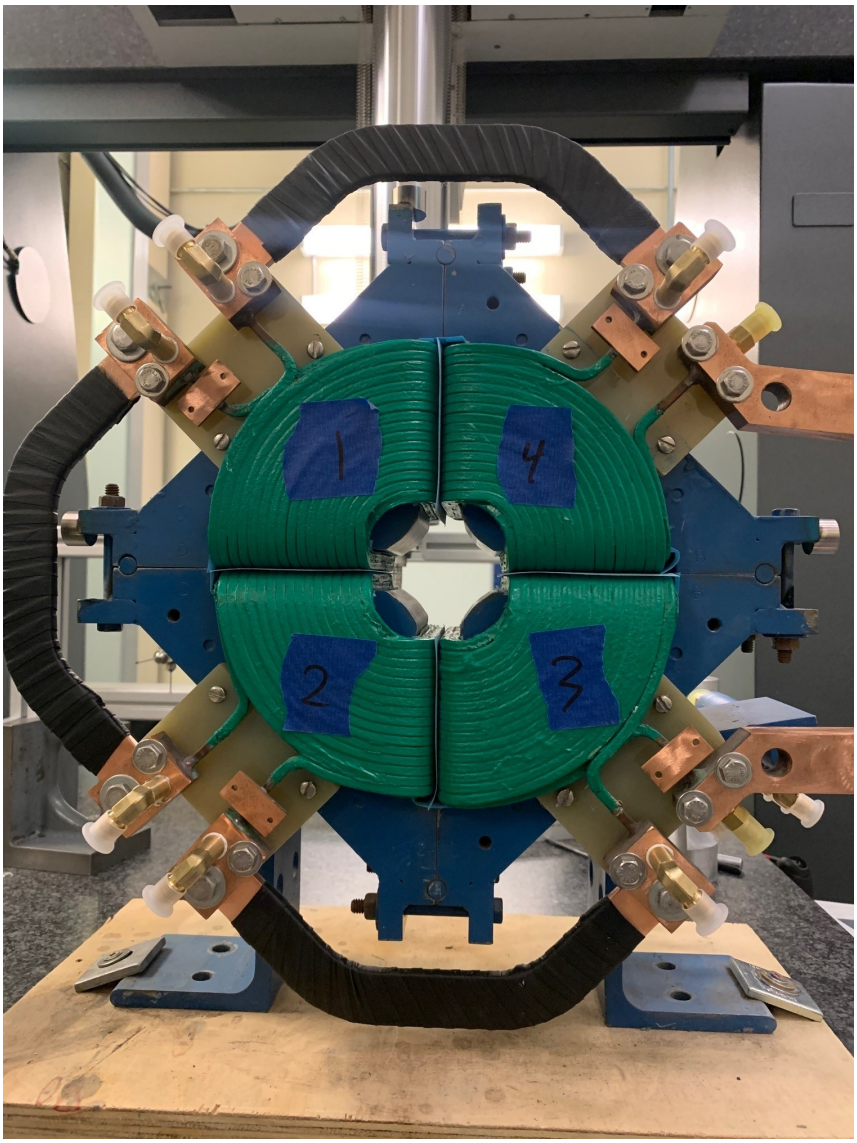
Pole Tip Deviations

Pole Tip	#1	#2	#3	#4
Min. Dev.	-0.0064	-0.0062	-0.0072	-0.0026
Max. Dev.	0.0006	0.0045	0.0008	0.0009

Barcode # :

Mfg. S/N : QDAS13

Angle of the Composite Pole Tip Best-Fit



in Decimal Degrees ° :	0.00884
Angle in Milliradians :	0.15431

Barcode # :

Mfg. S/N : QDAS13