Gradient Dipole Magnet Checks	109D40

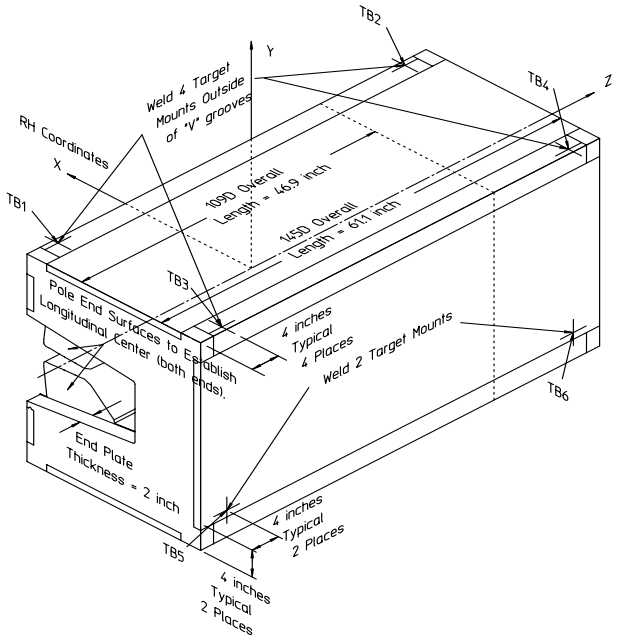
Date: 2/27/02

Magnet: 109D40

Operators: M. Rogers; C. Banuelos

Notes:

Magnetic vs. Mechanical offset NOT applied (June 2002)



Magnetic Fiducial Coordinates: (inches)

Fiducial	Z	X	Y
TB1	-19.4025	3.4414	16.9973
TB2	19.4070	3.4429	16.9989
TB3	-19.4163	-22.4093	17.0013
TB4	19.3947	-22.3622	16.9961
TB5	-19.3521	-24.2413	-11.3998
TB6	19.1824	-24.2437	-11.4723

Offset: 0.2146 inches

Description:

Fiducial values based on the x-offset of the mechanical center line to the magnetic.

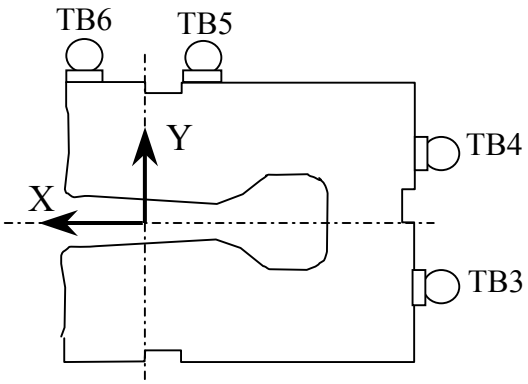
Downstream Garage Mechanical Check:

109D40 Status

Horizontal (X)	Vertical (Y)		
0.098 mm	-0.027 mm	X-value: Y-value:	OK OK

Description:

How much does the Z-axis from the US garage miss the center of the DS garage?



Trolley Checks:

109D40 Status

Trolley Distance

3D Distance R1	3D Distance R2	R2 - R1 (mm)	
2800.253 mm	2800.207 mm	-0.046	OK

Description:

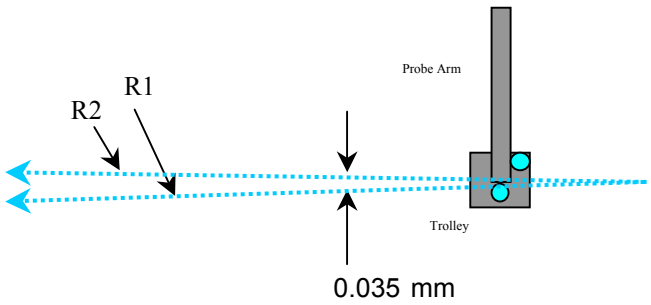
Travel distance for trolley target points should be similar. If not, trolley (rails) may be skewed.

Z-axis Vector

3D Angle	Yaw	Pitch	Midpoint 3D Offset (mm)	
0.0253	0.0122	0.0221 mrad	0.035	OK

Description:

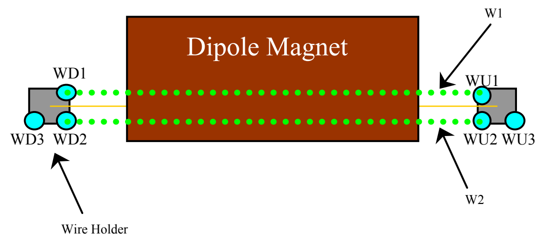
Angle between R1 and R2 vectors. The average of these two defines the Z-axis.



Wire Holder Position Checks: 109D40 Status

Wire Holders' Yaw Check			
3D Distance W1	3D Distance W2	W2 - W1 (mm)	
2382.960 mm	2382.541 mm	-0.419	OK

Description:
Distance between wire holders for TB1 and TB2.



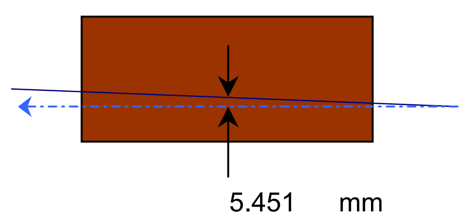
Wire Position Checks: 109D40 Status

Wire Orientation					
3D Angle	Yaw	Pitch		Midpoint 3D Offset (mm)	
0.0801	0.0505	-0.0622	mrad	0.095	Too Big?

Description:
Orientation of wire with respect to Z-axis defining axis of dipole.

Wire Offsets					
US	Origin	DS			
5.391	**5.451**	5.511	mm	Origin Offset:	Range?

Description:
Offset distance from the mechanical center to the wire. (x-offsets only! 5.00 mm considered nom)



End Surface Orientation Check and Magnet Length: 109D40

Status

End Surfaces

	3D Angle	Yaw	Pitch		3D Offset (mm)	Status
US:	1.2533	-0.7885	0.9741	mrad	~ 0.840	Too Big?
DS:	0.6443	-0.4762	0.4340		~ 0.432	OK

Description:

End surface orientation relative to reference frame.

Note: 3D Offset based on average of width and height of the magnet side.

Length of Magnet

Distance **with SMR**		Distance		Status
1227.864	mm	1189.764	mm	LENGTH?

Description: *Length of magnet along Z-axis. (Design vals: 1551.61 and 1189.10)*

Top Surface Orientation Check: 109D40

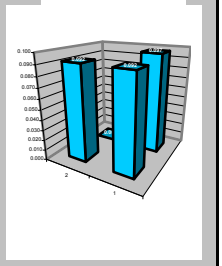
Status

Top of Magnet

Height (Y-value) **with 0.75"**			Delta Y		Status
Corner 1	412.705	mm	0.092	Delta Y C1:	OK
Corner 2	412.705	mm	0.092	Delta Y C2:	OK
Corner 3	412.710	mm	0.097	Delta Y C3:	OK
Corner 4	412.613	mm	0.000	Delta Y C4:	OK

Dispersion:

Corner 1	0.036	mm
Corner 2	0.020	mm
Corner 3	0.028	mm
Corner 4	0.030	mm
Overall	0.051	mm



Roll (mm) ~ 0.041 — OK

3D Angle	Roll	Pitch		Pitch (mm)	Status
0.0964	0.0754	0.0600	mrad	~ 0.071	OK

Twist:	Roll	Pitch			Status
	-0.1796	-0.0815	mrad		
	-0.097	-0.097	mm	Twist:	OK

Description:

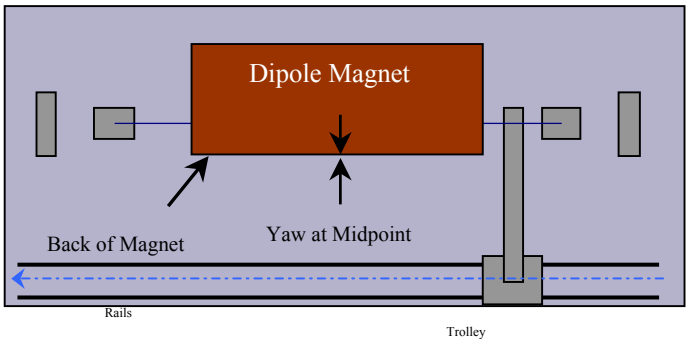
Top surface corner heights and average surface orientation values. ***(With 0.75" SMR offset.)***

Back Surface Orientation Check: 109D40

Back of Magnet					Status
Horizontal (X-value)				Delta X	
US:	115.733	mm		0.130	
Origin:	115.668	mm		0.065	
DS:	115.603	mm		0.000	
3D Angle	Roll	Yaw			
0.2065	0.1759	-0.1083	mrad		
				Midpoint Yaw in mm	
				-0.064	OK

Description:

Position of scanned half of back surface of magnet for yaw check. ***(With 0.75" SMR offset.)***



Gradient Magnet
Magnetic Measurements/FiducializationTraveller

Approval must be obtained before going on to the next procedure
or removing the magnet from the test stand.
Magnetic Measurements Approval by – Jack Tanabe or Nanyang Li
Fiducialization Approval by – Jack Tanabe or Tony King
Magnet Serial Number: 109D40
Capacitive System Alignment
Date_____, Operator _____
Fiducial Measurements
See Data Sheet on Next Page. Approval:
Date: 2/27/02 Operator: M. Rogers
Water, Power and Interlock Connections.
Date_____, Operator _____
Measured Water Flow _____ gpm at Δp= _____ psi
Maximum Conditioning Current:_____ Amps
Wire Magnetic Measurements
Currents _____
Summary File Name(s)_____
Date_____, Operator _____ Approval _____
Coil Magnetic Measurements: Required _____ Yes _____ No.
Currents _____
Summary File Name(s)_____
Date_____, Operator _____ Approval _____

Gradient Magnet

Reduced Data Sheet

Approval must be obtained before removing magnet from test stand.

Magnetic Measurements Approval by – Jack Tanabe or Tony King.

Magnet Serial Number: 109D40

Magnetic Measurements Operator: _____ Date:_____

Measured Magnetic Center Offset: 5.451 mm

Measured at:

Integrated Field: _____ T-m @ _____ Amps

Corrected to:

Integrated Field: XX.XXX T-m @ XXX.XXX Amps

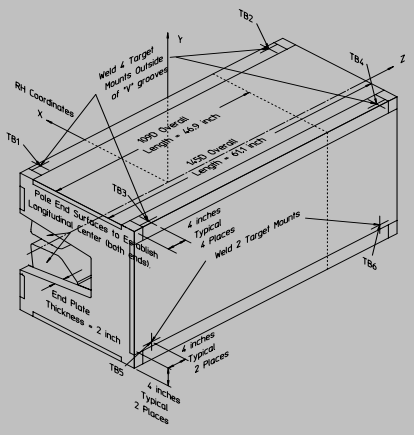
Fiducialization:

Operator(s): M. Rogers C. Banuelos

Date: 2/27/02 Temp: 20 deg. C

Fiducial - Measured	z mm	x mm	y mm
TB1	-492.823	87.412	431.731
TB2	492.939	87.450	431.773
TB3	-493.174	-569.196	431.832
TB4	492.625	-568.001	431.702
TB5	-491.543	-615.729	-289.556
TB6	487.234	-615.789	-291.397

Mechanical Centerline Tooling Ball Coordinates



Fiducial - Magnetic	z mm	x mm	y mm
TB1	-492.823	87.412	431.731
TB2	492.939	87.450	431.773
TB3	-493.174	-569.196	431.832
TB4	492.625	-568.001	431.702
TB5	-491.543	-615.729	-289.556
TB6	487.234	-615.789	-291.397

Magnetic Centerline Tooling Ball Coordinates

Check Measurements:

Corner	$x_{measured}$ mm	$x_{nominal}$ mm
C1	96.683	96.520
C2	96.553	96.520
	incl. paint	no paint

	$y_{measured}$ mm	$y_{nominal}$ mm
C1	393.655	393.700
C2	393.655	393.700
C3	393.660	393.700
C4	393.563	393.700
	incl. paint	no paint

Approval: