Gradient Dipole Magnet Checks	109D32

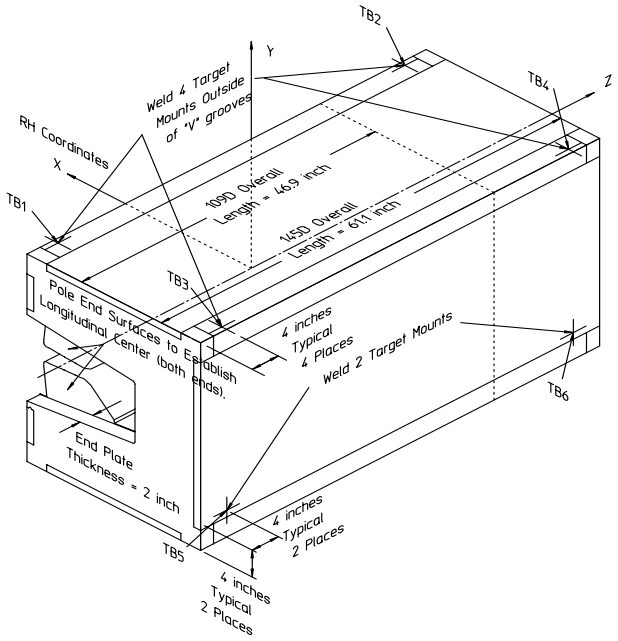
Date: 4/5/02

Magnet: 109D32

Operators: F. Gaudreault; L. Griffin

Notes:

Magnetic vs. Mechanical offset NOT applied (June 2002)



Magnetic Fiducial Coordinates: (inches)

Fiducial	Z	X	Y
TB1	-19.4227	3.4465	17.0002
TB2	19.4057	3.4413	16.9974
TB3	-19.4201	-22.3952	16.9996
TB4	19.4298	-22.3744	16.9976
TB5	-19.2574	-24.2485	-11.3836
TB6	19.3315	-24.2512	-11.4659

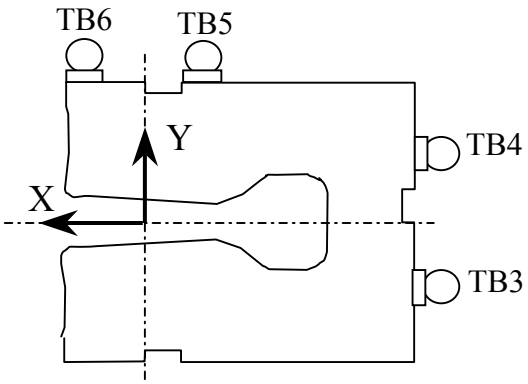
Offset: 0.2144 inches

Description:

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

Downstream Garage Mechanical Check:

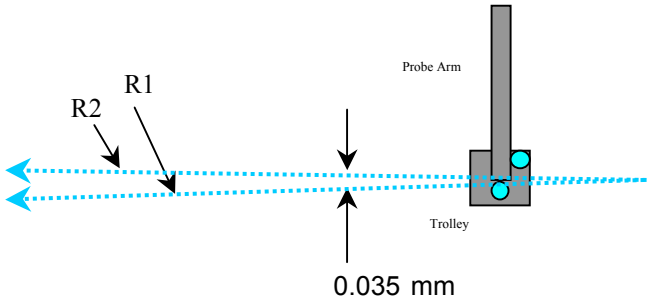
		109D32 Status
Horizontal (X) 0.079 mm; Vertical (Y) 0.016 mm	X-value: Y-value:	OK OK
Description: *How much does the Z-axis from the US garage miss the center of the DS garage?*		



Trolley Checks:

		109D32 Status
Trolley Distance 3D Distance R1 2800.176 mm; 3D Distance R2 2800.128 mm	R2 - R1 (mm) -0.048	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: 0.0250 / 0.0170 / 0.0190 mrad	Midpoint 3D Offset (mm) 0.035	OK
Description: *Angle between R1 and R2 vectors. The average of these two defines the Z-axis.*		



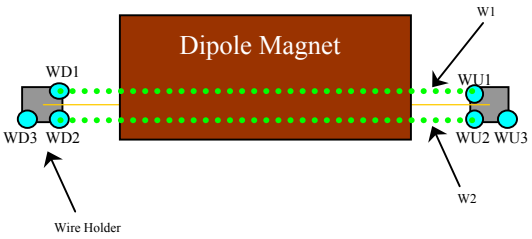
Wire Holder Position Checks:

109D32
Status

Wire Holders' Yaw Check					
3D Distance W1		3D Distance W2		W2 - W1 (mm)	
2383.369	mm	2383.070	mm	-0.299	OK

Description:

Distance between wire holders for TB1 and TB2.



Wire Position Checks:

109D32
Status

Wire Orientation					
3D Angle	Yaw	Pitch		Midpoint 3D Offset (mm)	
0.0970	0.0630	-0.0740	mrad	0.116	Too Big?

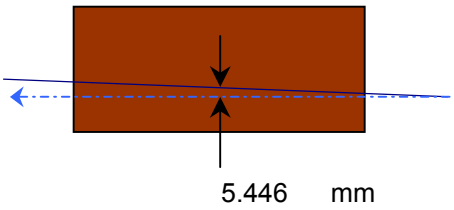
Description:

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

Wire Offsets					
US	Origin	DS			
5.371	**5.446**	5.521	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: 109D32

Status

End Surfaces

	3D Angle	Yaw	Pitch		3D Offset (mm)	Status
US:	0.6940	-0.6830	-0.1240	mrad	~ 0.465	OK
DS:	0.3040	-0.3040	0.0080		~ 0.204	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
1228.196	mm	1190.096	mm	LENGTH?

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

Top Surface Orientation Check: 109D32

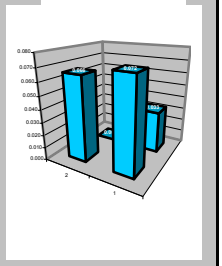
Status

Top of Magnet

Height (Y-value) **with 0.75"**			Delta Y		Status
Corner 1	412.733	mm	0.072	Delta Y C1:	OK
Corner 2	412.727	mm	0.066	Delta Y C2:	OK
Corner 3	412.694	mm	0.033	Delta Y C3:	OK
Corner 4	412.661	mm	0.000	Delta Y C4:	OK

Dispersion:

Corner 1	0.030	mm
Corner 2	0.024	mm
Corner 3	0.033	mm
Corner 4	0.020	mm
Overall	0.041	mm



Roll (mm) ~ 0.058 — OK

3D Angle	Roll	Pitch		Pitch (mm)	Status
0.1100	0.1080	0.0230	mrad	~ 0.027	OK

Twist:	Roll	Pitch			Status
	-0.0500	-0.0227	mrad		
	-0.027	-0.027	mm	Twist:	OK

Description:

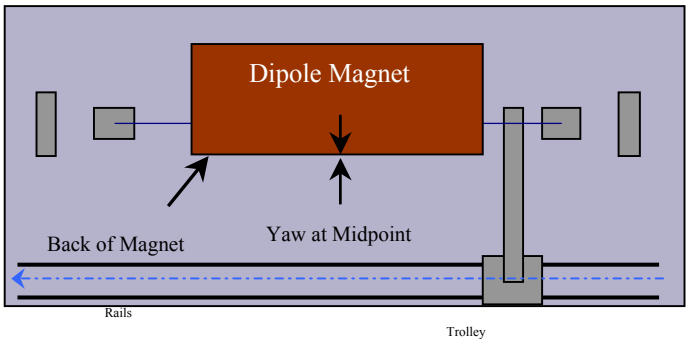
Top surface corner heights and average surface orientation values. ***(With 0.75" SMR offset.)***

Back Surface Orientation Check: 109D32

					Status
Back of Magnet					
Horizontal (X-value)			Delta X		
US:	115.599	mm	0.000		
Origin:	115.638	mm	0.039		
DS:	115.677	mm	0.078		
3D Angle	Roll	Yaw		Midpoint Yaw in mm	
0.0780	0.0430	0.0650	mrad	0.039	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: 109D32
Capacitive System Alignment
Date_____, Operator _____
Fiducial Measurements
See Data Sheet on Next Page. Approval:
Date: 4/5/02 Operator: F. Gaudreault
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: 109D32

Magnetic Measurements Operator: _____ Date:_____

Measured Magnetic Center Offset: 5.446 mm

Measured at:

Integrated Field: _____ T-m @ _____ Amps

Corrected to:

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

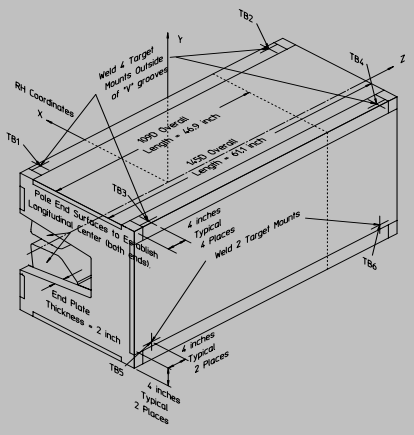
Fiducialization:

Operator(s): F. Gaudrea L. Griffin

Date: 4/5/02 Temp: 20 deg. C

Fiducial - Measured	z mm	x mm	y mm
TB1	-493.337	87.541	431.805
TB2	492.904	87.408	431.734
TB3	-493.270	-568.838	431.789
TB4	493.517	-568.309	431.738
TB5	-489.138	-615.911	-289.143
TB6	491.019	-615.980	-291.235

Mechanical Centerline
Tooling Ball Coordinates



Fiducial - Magnetic	z mm	x mm	y mm
TB1	-493.337	87.541	431.805
TB2	492.904	87.408	431.734
TB3	-493.270	-568.838	431.789
TB4	493.517	-568.309	431.738
TB5	-489.138	-615.911	-289.143
TB6	491.019	-615.980	-291.235

Magnetic Centerline
Tooling Ball Coordinates

Check Measurements:

Corner	$x_{measured}$ mm	$x_{nominal}$ mm
C1	96.549	96.520
C2	96.627	96.520
	incl. paint	no paint

	$y_{measured}$ mm	$y_{nominal}$ mm
C1	393.683	393.700
C2	393.677	393.700
C3	393.644	393.700
C4	393.611	393.700
	incl. paint	no paint

Approval: