



Geometrical Measurements

HCQQXF_SB014-CR000001 / LMQXFB01

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MAB meeting 09/12/2024

Q2B HCQQXF_SB014-CR000001 / LMQXFB01

- Measurements @ construction
 - Coldmass form & shape
- Magnetic vs. mechanical axis
- Fiducialisation
 - Fiducialisation following Coldbore re-installation

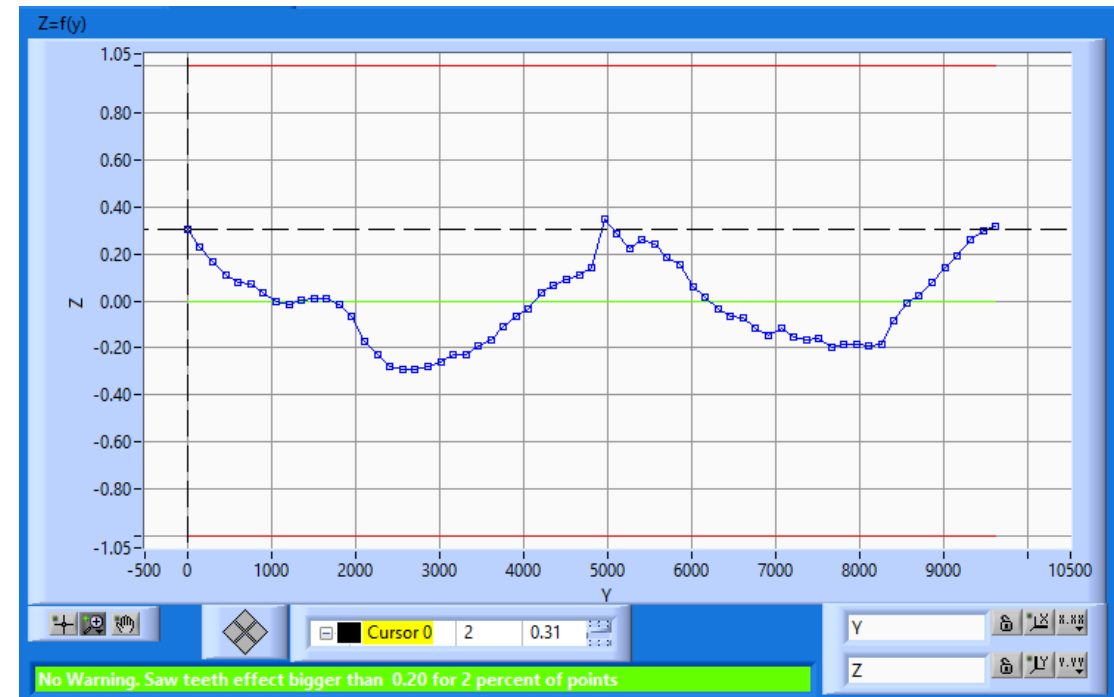
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Measurements @ construction in 180 (bare coldmass HCLMQXFB001-CR000004)

Horizontal Shape



Vertical Shape

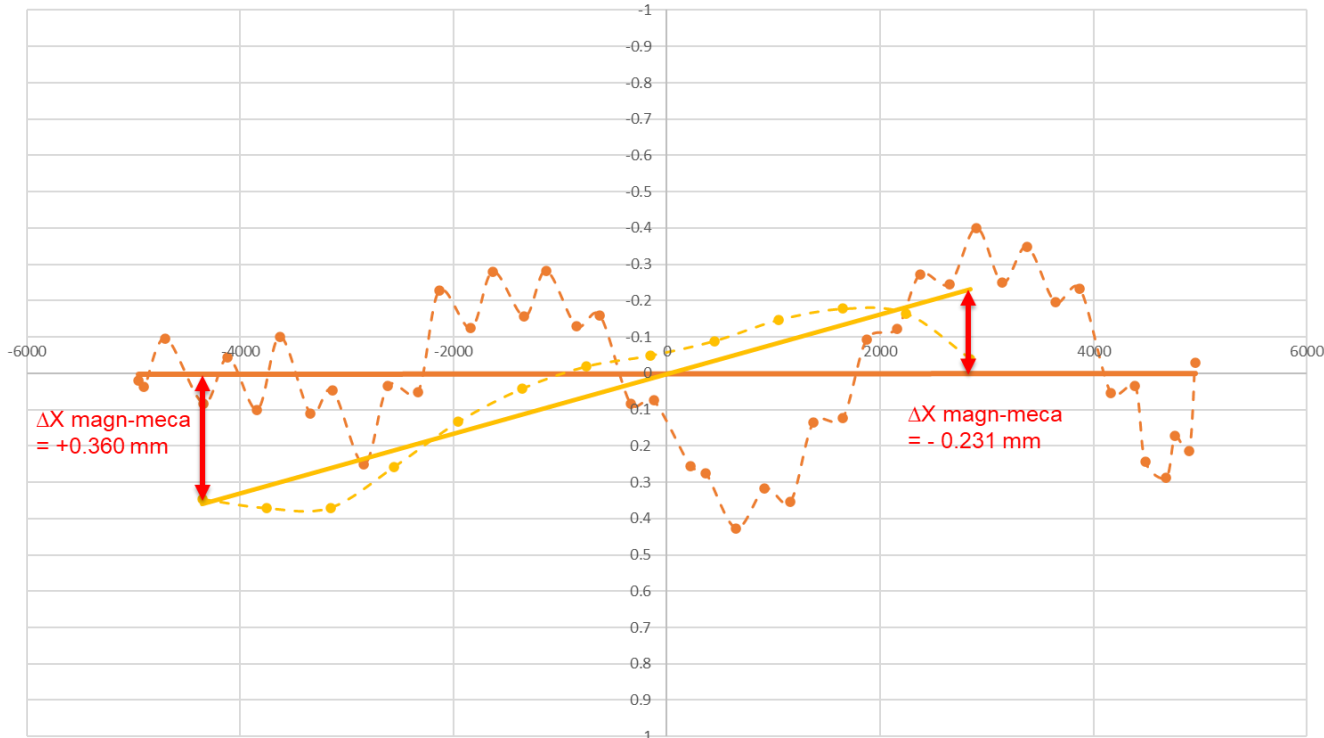


Horizontal and vertical shape within $\pm 0.45\text{mm}$

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Radial shape mechanical + magnetic axis 180

Cold bore (Radial, X)



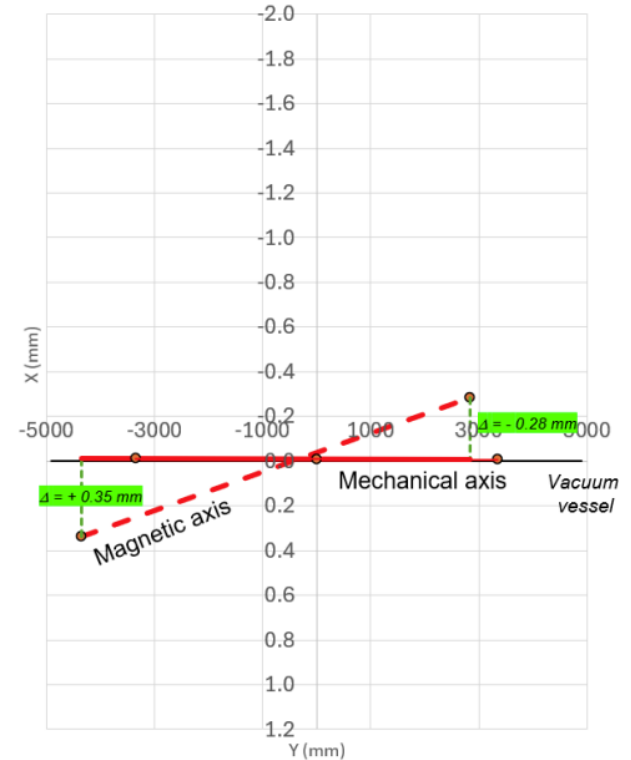
Conn/IP side

- - - 26th Mars 2024 : Cold bore Meas. FIDU SM12
- 26 March 2024 : FIDU SM12 : Regression line
- - - 27th March 2024 : New Magnetic Meas.
- 27th March 2024 : Magnetic Meas : Regression line

NConn/NIP side

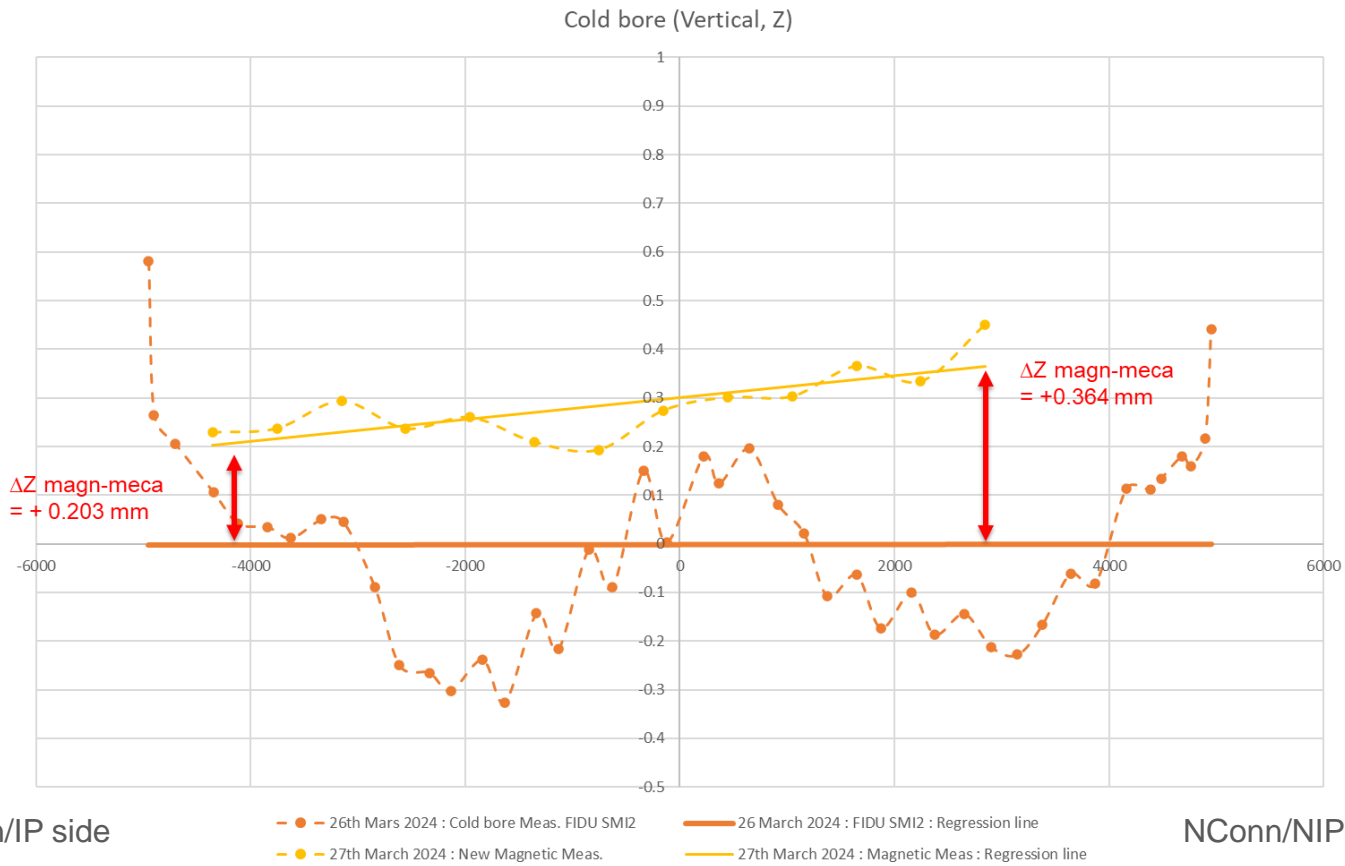
WARM Ambient pressure : SM18

Radial measurement



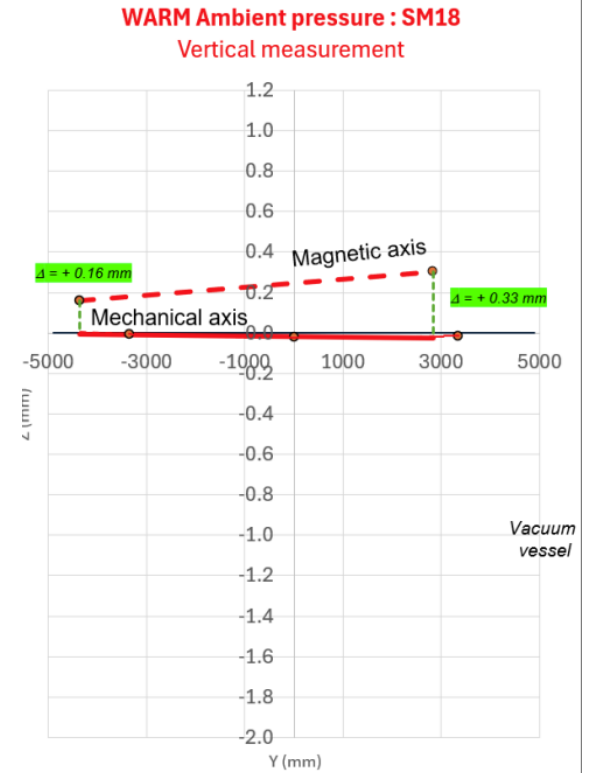
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Vertical shape mechanical + magnetic axis 180



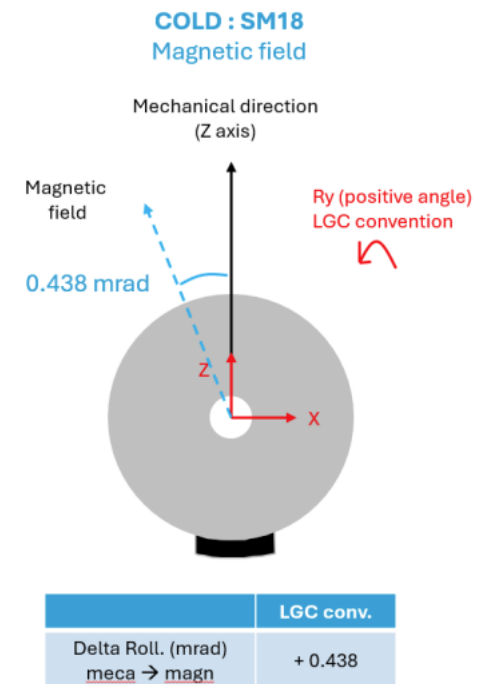
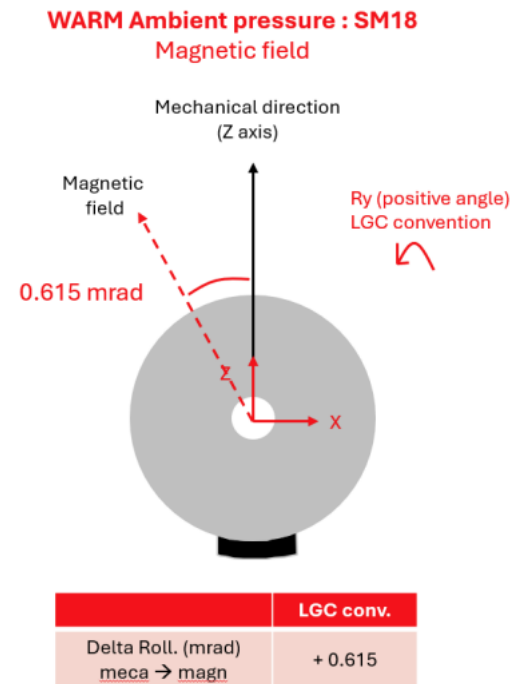
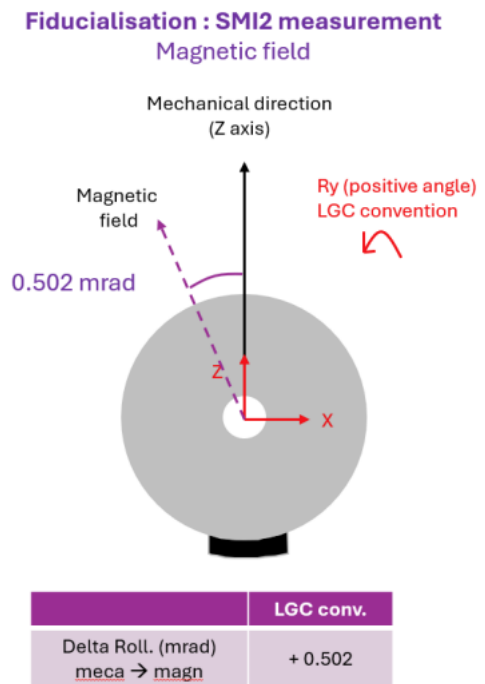
Conn/IP side

NConn/NIP side



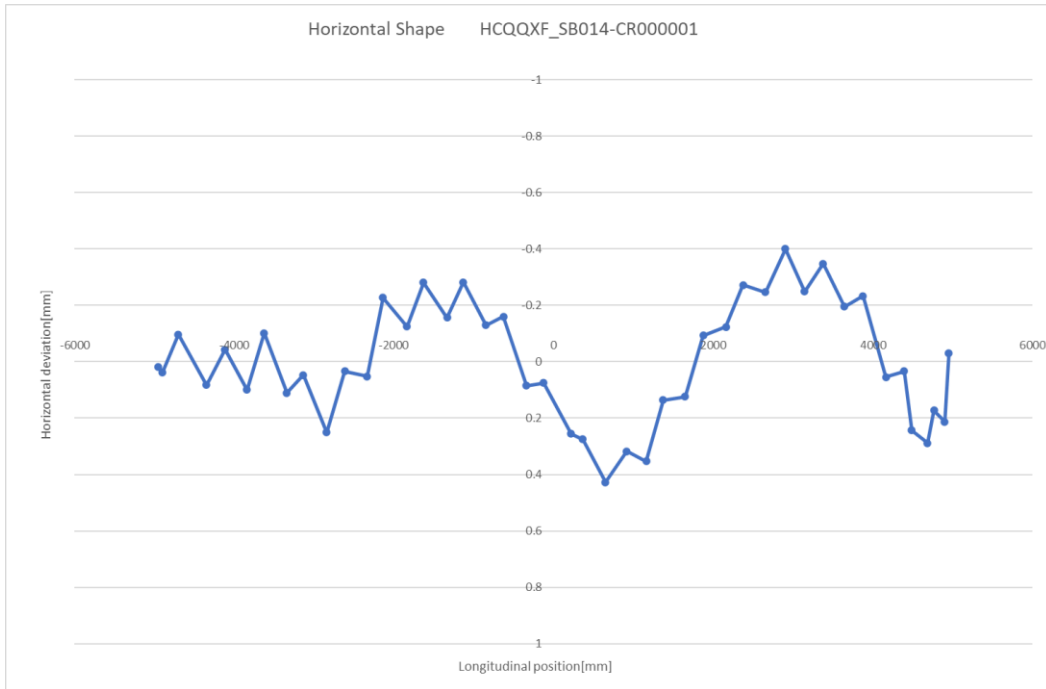
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The Field direction is coherent along the process



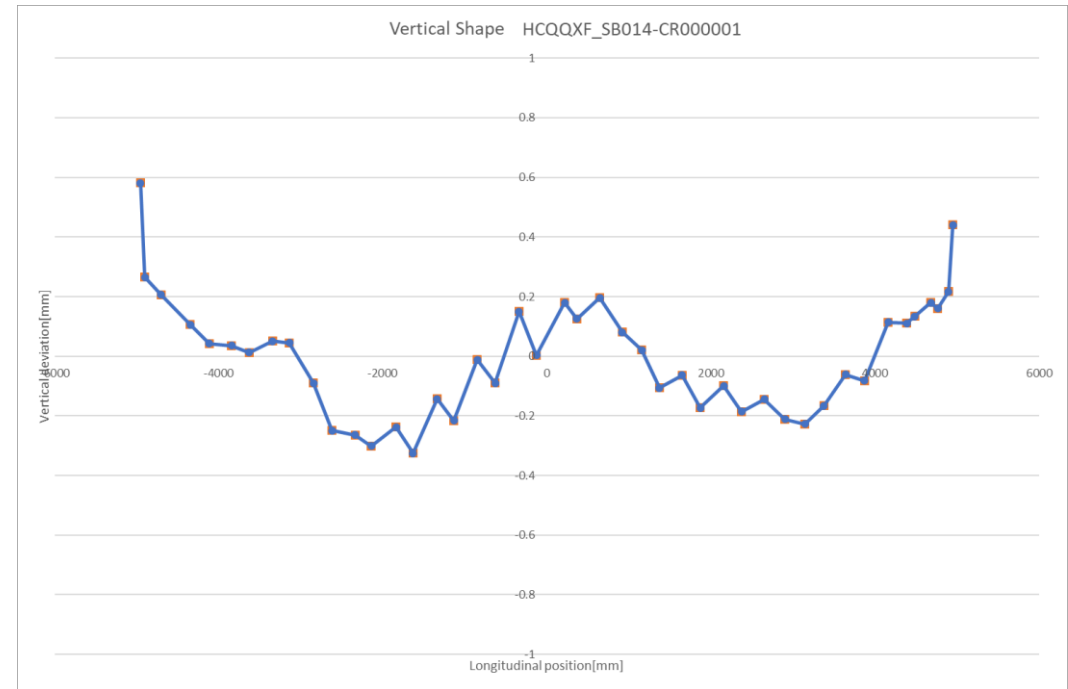
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Fiducialisation in SMS18 (Coldbore re-installation)



Conn/IP side

NConn/NIP side



Conn/IP side

NConn/NIP side

General Feedback Q2B HCQQXF_SB014-CR000001

- **Vacuum vessel deformations are taken into account**
 - 35µm/deg plus random part after transport ~0.15mm
- **FSI fully following the coldmass position**
 - Consistent movements for all conditions
 - Coherent movement of coldfeet supports
- Full details are in the test report: [Test Report_LMQXFB01.pdf](#)
- Cartography of all extremities will be done end of Phase 2
- Additional fiducialisation planned
- BPM-Beamscreen extremities only in Phase 3 (not for String)