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LHC-b - UX85
Outer Tracker – T1-VX (C frame A3 position) – Cryo Side
November 3rd, 2006
AFTER ADJUSTMENT

The EDMS document, **id: 792819** containing this report can be found at the address:

<https://edms.cern.ch/document/792819>

1 T1-VX – Introduction:

The aim of the measurement was to adjust and control the C-frame on the rail A3 on Cryo Side (for the name of the rail, see the document EDMS <https://edms.cern.ch/document/756237>). This C-frame is called T1-VX.

2 LHC-b Survey Co-ordinate System

- Origin: Interaction Point IP;
- Z_{SU} axis: **vertical**, positive to the top;
- X_{SU} axis: beam projection in the **horizontal** plane, positive from cavern to IP;
- Y_{SU} axis: **horizontal**, perpendicular to the XZ plane, positive to the LHC centre

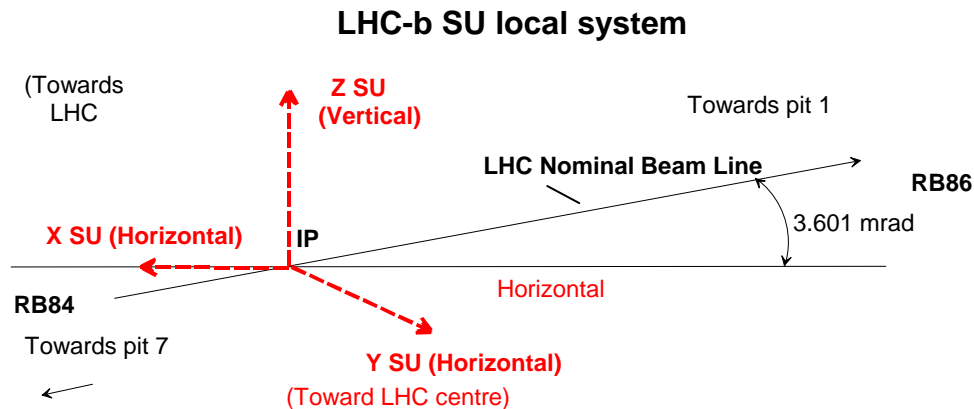


Figure 1 : LHCb Co-ordinate systems

3 C frame point positions and names:

3.1 Point names:

Point names are **A3_LVnB** or **A3_LXnT** with:

- *V or X*: Side of the frame, LV is on the magnet side and LX is on the Rich2 side.
- *n*: Chamber number on the frame, from 1 (Cryo side), to 9 (PZ side)
- *B or T*: for Bottom or Top

Example: A3_LV9T is on the magnet side, on the chamber 9, on the top.

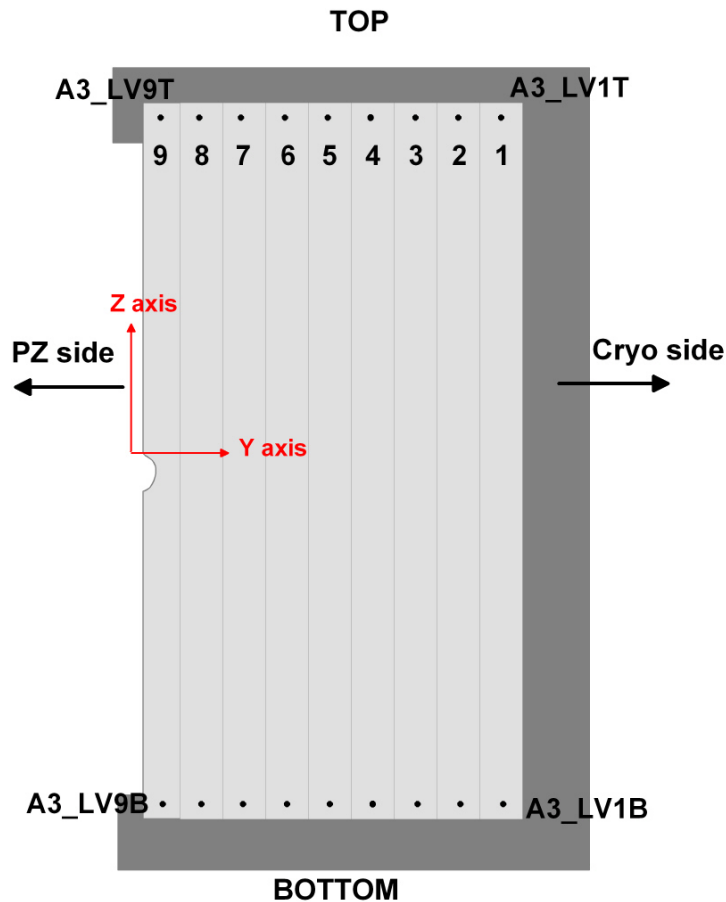


Figure 2 : Point positions – LV side

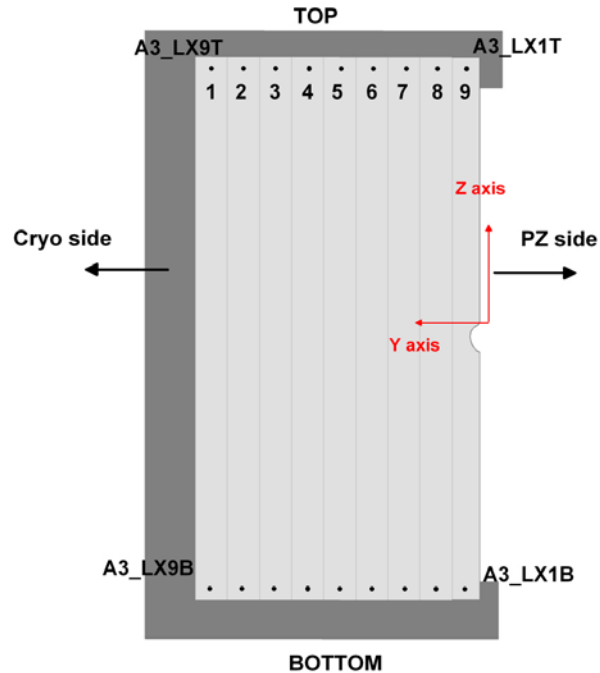
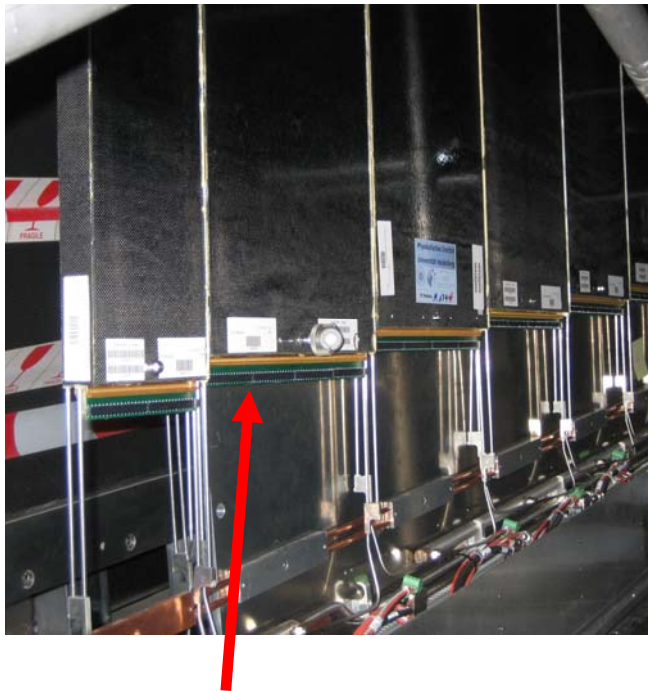


Figure 3 : Point positions – LX side

3.2 Measured points

The coordinates are given at the centre of the Survey target, at a horizontal distance of **30mm** from the contact surface, see figure 3.



Point position on the frame

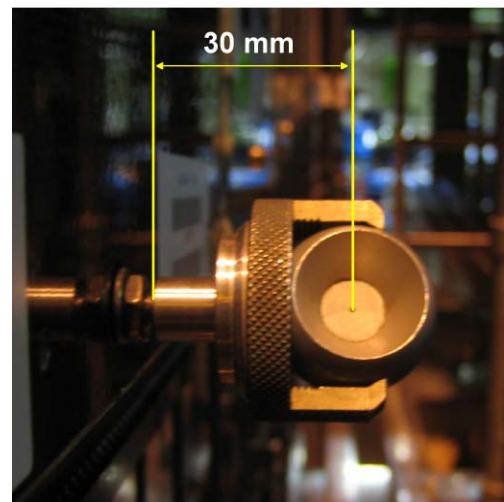


Figure 4 : Point position and target

4 Points after adjustment

The coordinates are given in the survey reference system at the centre of the target (see figure 4).

Precision of the coordinates along X, Y and Z axis is 0.5 mm at 1 sigma level.

Position after final adjustment			
LX side (Rich2 side)			
	X (m)	Y (m)	Z (m)
A3_LX1T	-8.0869	2.8151	2.4768
A3_LX2T	-8.0871	2.4739	2.4769
A3_LX3T	-8.0874	2.1327	2.4771
A3_LX4T	-8.0871	1.7912	2.4774
A3_LX5T	-8.0871	1.4498	2.4771
A3_LX6T	-8.0871	1.1086	2.4777
A3_LX7T	-8.0869	0.7674	2.4775
A3_LX8T	-8.0871	0.4262	2.4776
A3_LX9T	-8.0869	0.1687	2.4705
A3_LX1B	-8.0885	2.8158	-2.4233
A3_LX2B	-8.0883	2.4745	-2.4230
A3_LX3B	-8.0880	2.1334	-2.4234
A3_LX4B	-8.0878	1.7915	-2.4234
A3_LX5B	-8.0880	1.4506	-2.4231
A3_LX6B	-8.0878	1.1096	-2.4237
A3_LX7B	-8.0872	0.7681	-2.4239
A3_LX8B	-8.0871	0.4269	-2.4239
A3_LX9B	-8.0875	0.1697	-2.4173
A3_LV1B	-7.9289	2.6125	-2.4132
LV side (Magnet side)			
	X (m)	Y (m)	Z (m)
A3_LV3B	-7.9285	1.9273	-2.4133
A3_LV4B	-7.9285	1.5849	-2.4136
A3_LV5B	-7.9285	1.2422	-2.4138
A3_LV6B	-7.9286	0.8997	-2.4139
A3_LV7B	-7.9282	0.5570	-2.4141
A3_LV8B	-7.9283	0.2145	-2.4138
A3_LV9B	-7.9287	-0.0435	-2.4070
A3_LV9T	-7.9279	0.3820	2.4623

Note: A3_LV2B, A3_LV1B, and the points on LV side on the top (except A3_LV9T) were not measured because not reachable or not visible.