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**LHC-b - UX85**  
**Outer Tracker – T1-VX (C frame A3 position) – Cryo Side**  
**October, the 20th 2006**  
**BEFORE ADJUSTMENT**

The EDMS document, **id: 787117** containing this report can be found at the address:

<https://edms.cern.ch/document/787117>

## 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

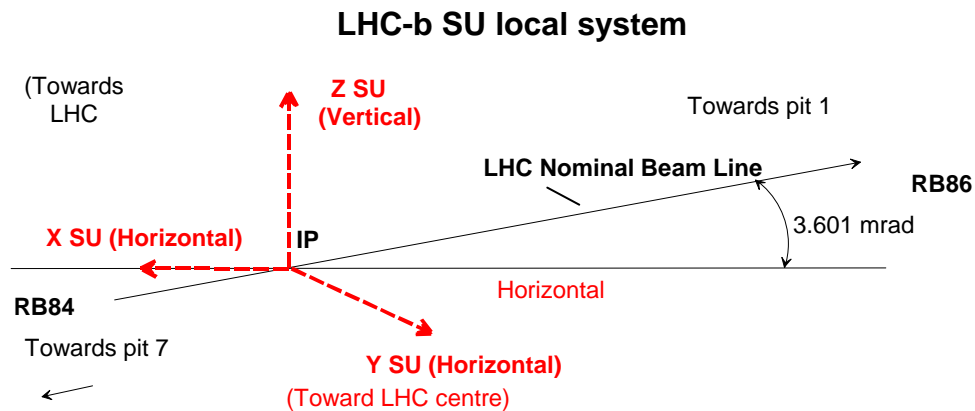


Figure 1 : LHCb Co-ordinate systems

### 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.

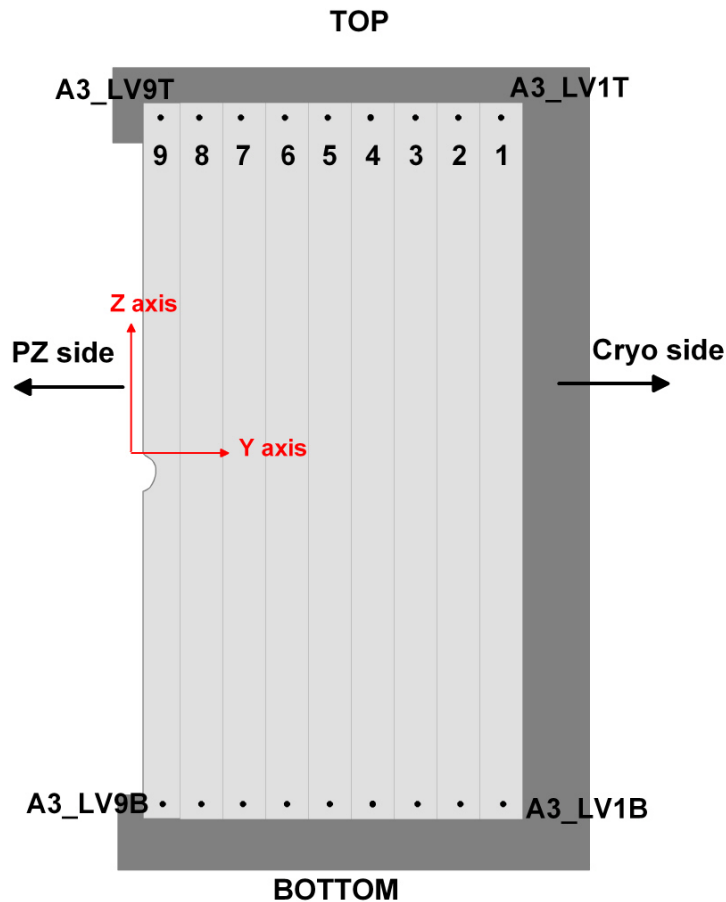


Figure 2 : Point positions – LV side

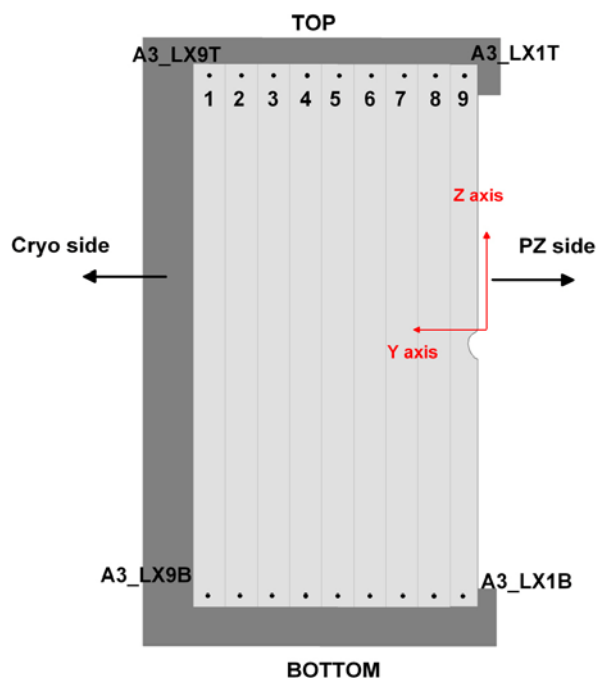
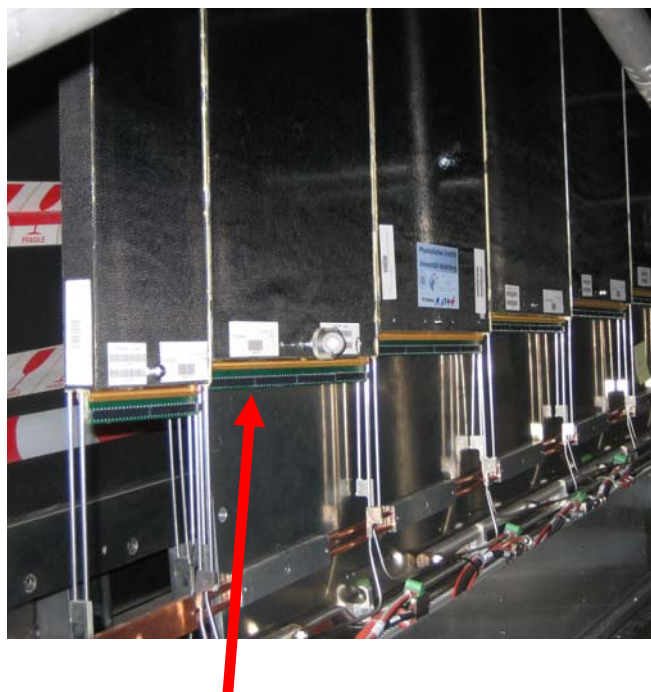


Figure 3 : Point positions – LX side

### 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

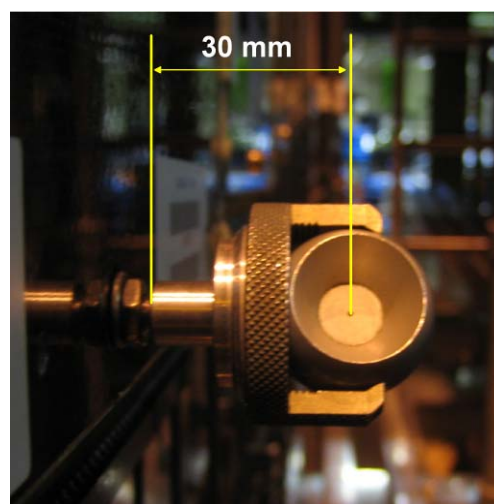


Figure 4 : Point position and target

#### 4 Points before 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.

	X (m)	Y (m)	Z (m)
A3_LX9B	-8.0866	0.1747	-2.4175
A3_LX8B	-8.0864	0.4320	-2.4239
A3_LX7B	-8.0868	0.7732	-2.4237
A3_LX6B	-8.0877	1.1146	-2.4232
A3_LX1B	-8.0891	2.8207	-2.4220
A3_LX9T	-8.0850	0.1710	2.4706
A3_LX8T	-8.0853	0.4285	2.4778
A3_LX1T	-8.0865	2.8174	2.4782
A3_LV9T	-7.9266	0.3846	2.4621
A3_LV9B	-7.9274	-0.0382	-2.4076
A3_LV8B	-7.9272	0.2199	-2.4144
A3_LV7B	-7.9272	0.5624	-2.4143
A3_LV6B	-7.9277	0.9049	-2.4137
A3_LV5B	-7.9280	1.2475	-2.4136
A3_LV4B	-7.9282	1.5901	-2.4131
A3_LV3B	-7.9283	1.9327	-2.4128
A3_LV2B	-7.9290	2.2751	-2.4127
A3_LV1B	-7.9293	2.6176	-2.4123