

BPMs in the HL-LHC Insertion Regions

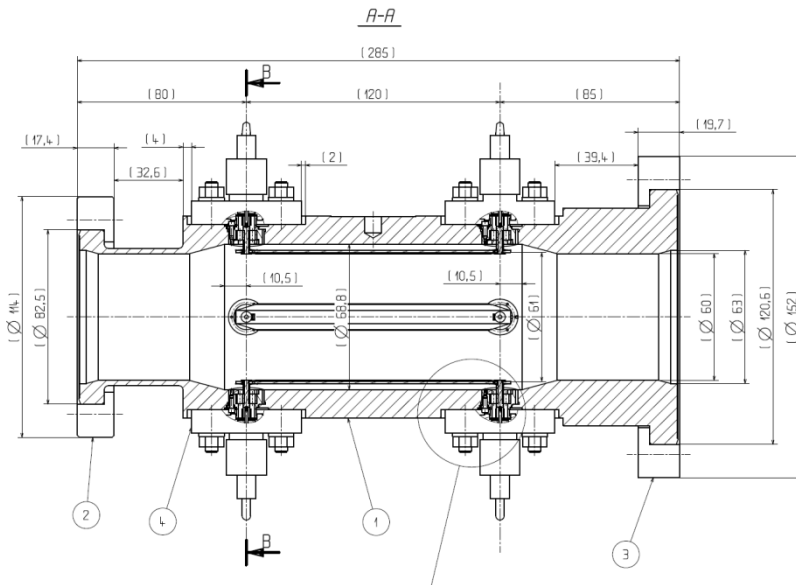
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HL-LHC PLC – 3rd Sept 2013

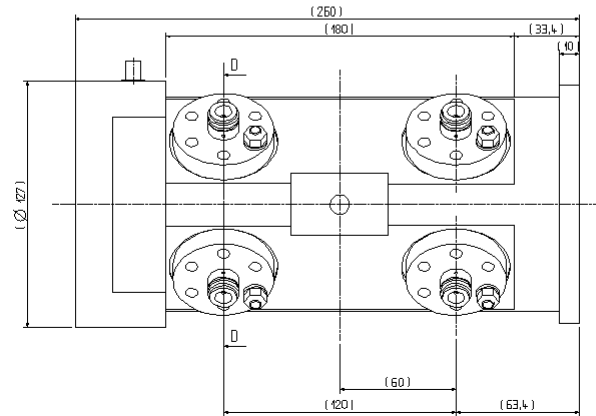
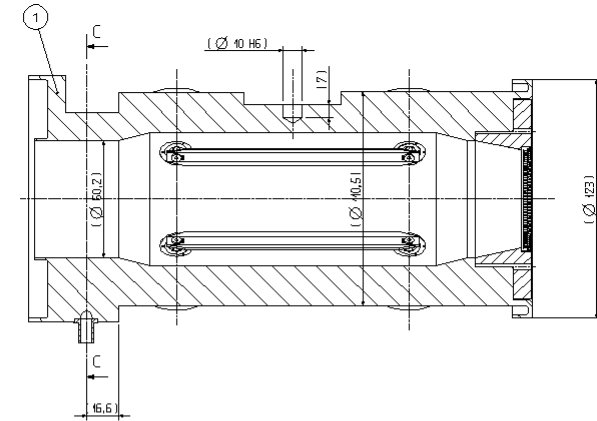
HL-LHC Experimental Insertion BPMs

BPM Aperture & Length

- Aperture
 - NOT related to length
 - Can adapt the same BPM for any aperture
 - Larger aperture \Rightarrow less signal & lower final resolution
- Length
 - **220mm** minimum for cold stripline BPM
 - **285mm** minimum for warm stripline BPM



BPMSW – Warm BPM in front of Q1

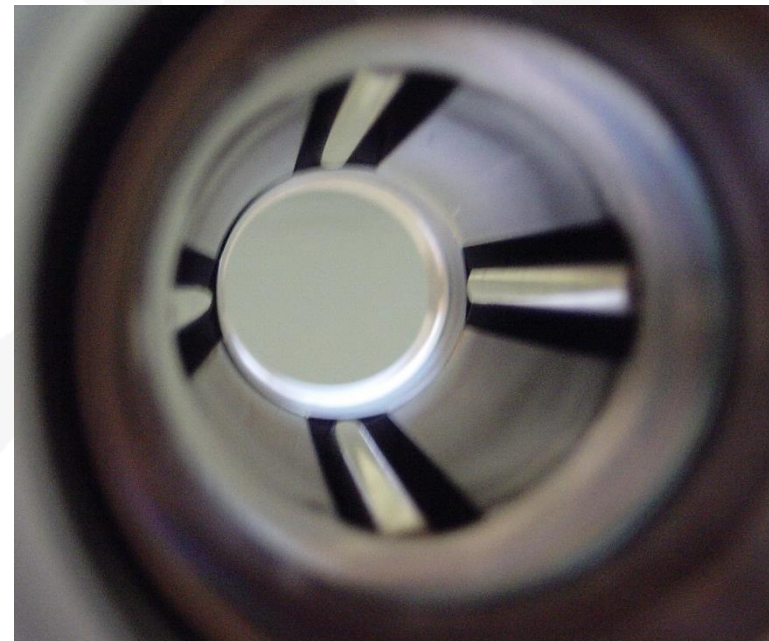
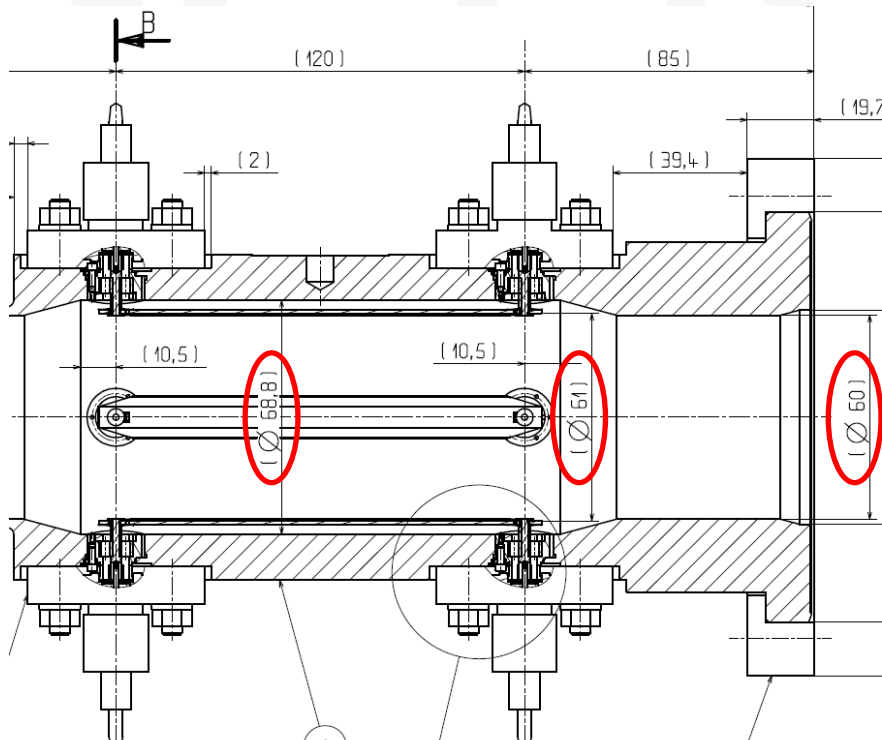


BPMS – Cold BPM in Q2

HL-LHC Experimental Insertion BPMs

- Tungsten Shielding?**

- Larger aperture an issue just before Q2b, Q3 and Corrector Package
- BPM body $\sim 9\text{mm} >$ beam screen aperture
- Tungsten body does not help as continuous shielding at small radii required
- Need to rotate BPM by 45 degrees & insert tungsten shielding on mid-planes




Example of BPM aperture compared to cold bore aperture

Stripline design with rod electrodes separated by metallic inserts

HL-LHC Experimental Insertion BPMs

- HL-LHC Experimental Insertions – Proposed BPM Layout

 Rotated by 45 degrees with Tungsten shielding

