

Blind mate plugins for the BPMs cables of IR7 collimators

HiColDEM meeting #22

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- Are needed for a fast and remote connection/disconnection of collimators in IR7.
- 4 coaxial cables (and now 6 cables for Metallic collimators)
- Alignment request X & Y : +/- 1.5mm
- Alignment request Z axis : +/- 2mm
- Rotation X & Y : +/- 1 degree

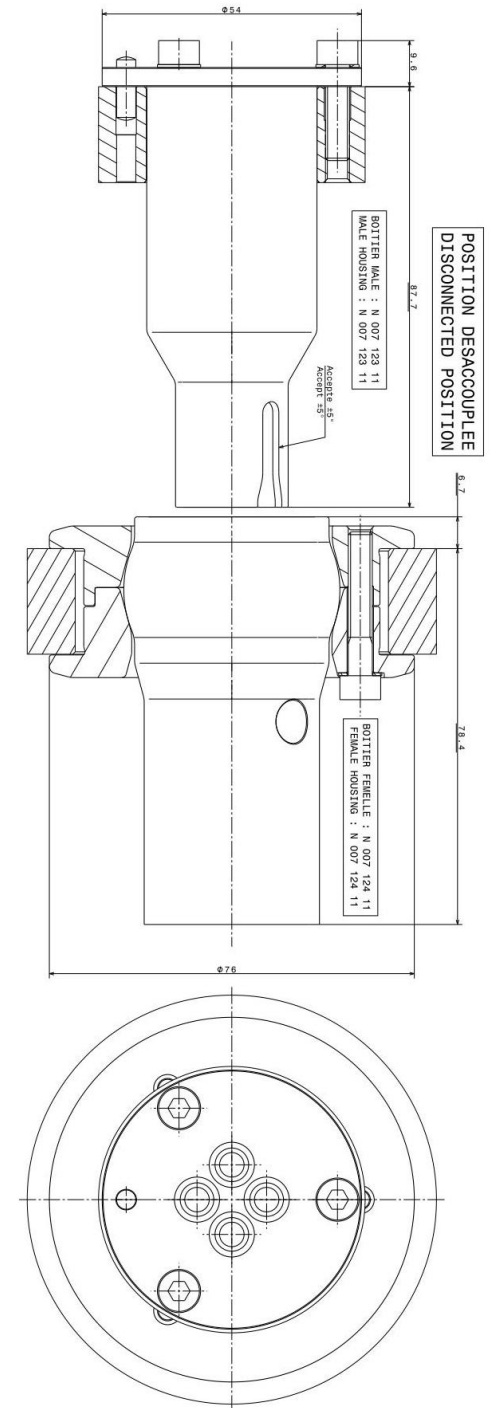
1st development done with Staubli in 2012:

External shape and alignment system is a copy of the water plug-in;

2 prototypes are installed in IR7 in 2017 (electrically but not mechanically) on TCPP.C6L7 and TCSPM.D4R7

Staubli development is not really satisfactory:

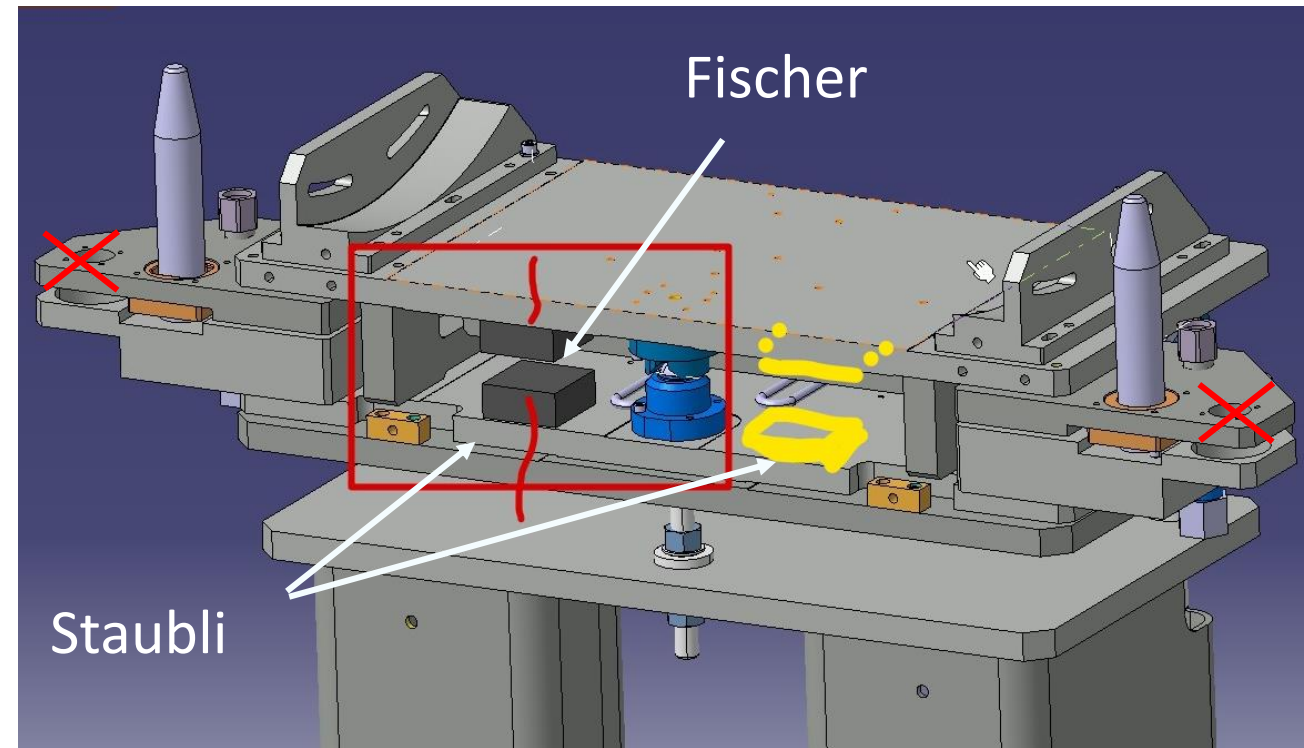
- Electrical impedance mismatch due to use of PE HD insulation in contacts;
- Massive steel parts;
- It can only include 4 coaxial connectors;
- Installation on ears add unbalance to the tank alignment & connection



A new DO was launched in 2017:

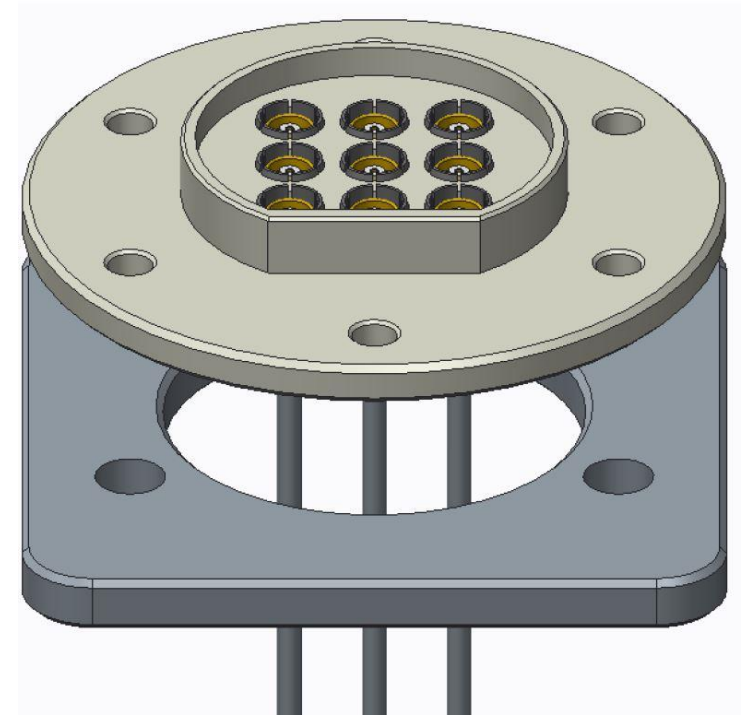
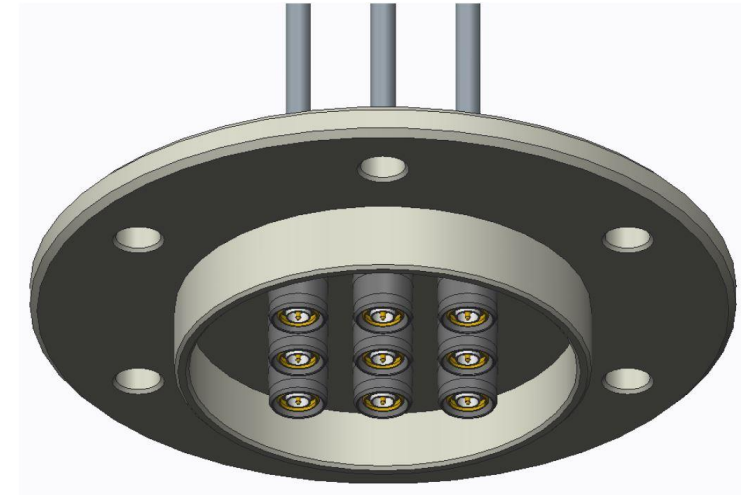
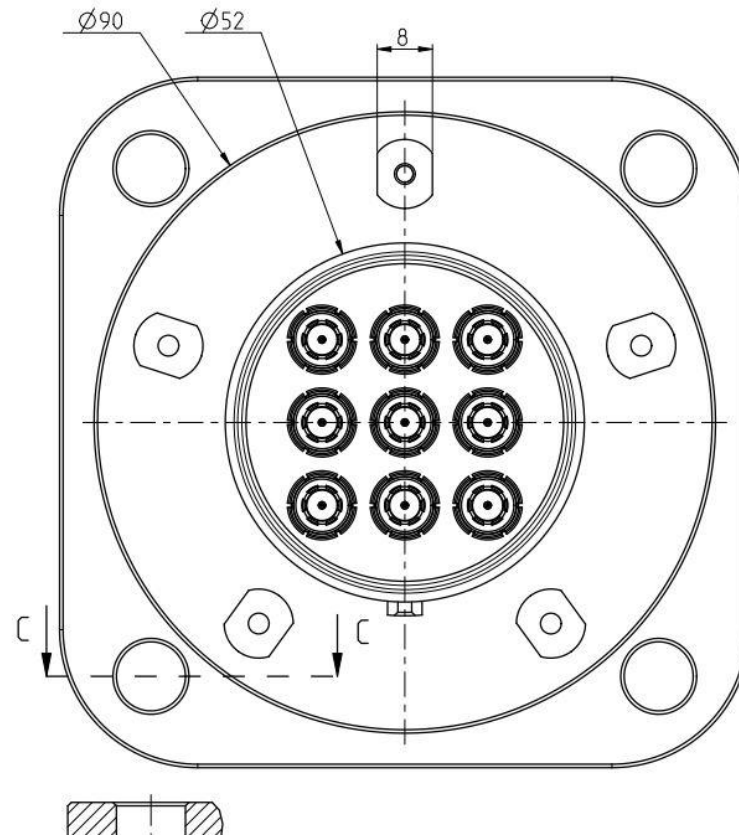
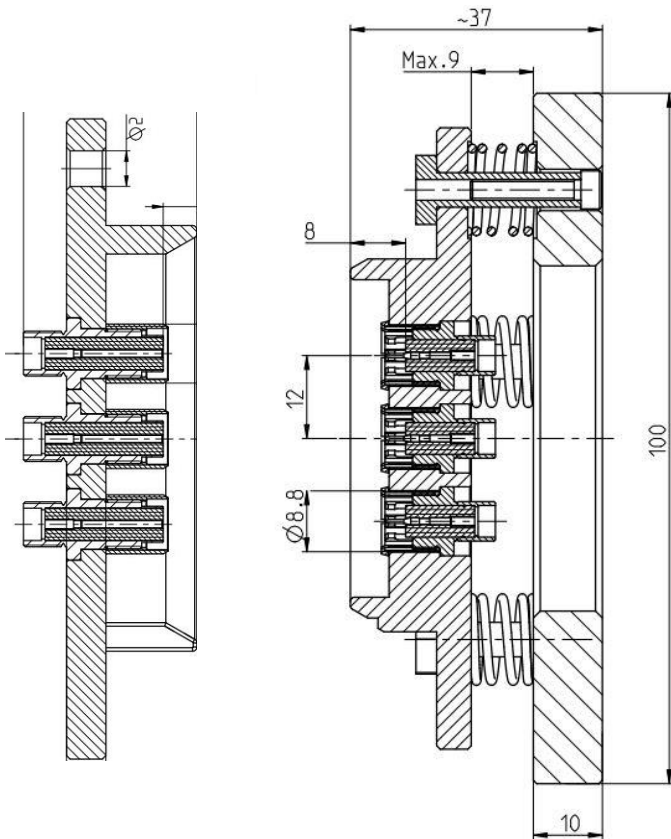
- for a plugin with 6 or more coax.
- in central position on the collimator support.

- Staubli declined =>
- Development of prototypes ordered to FISCHER (CH).



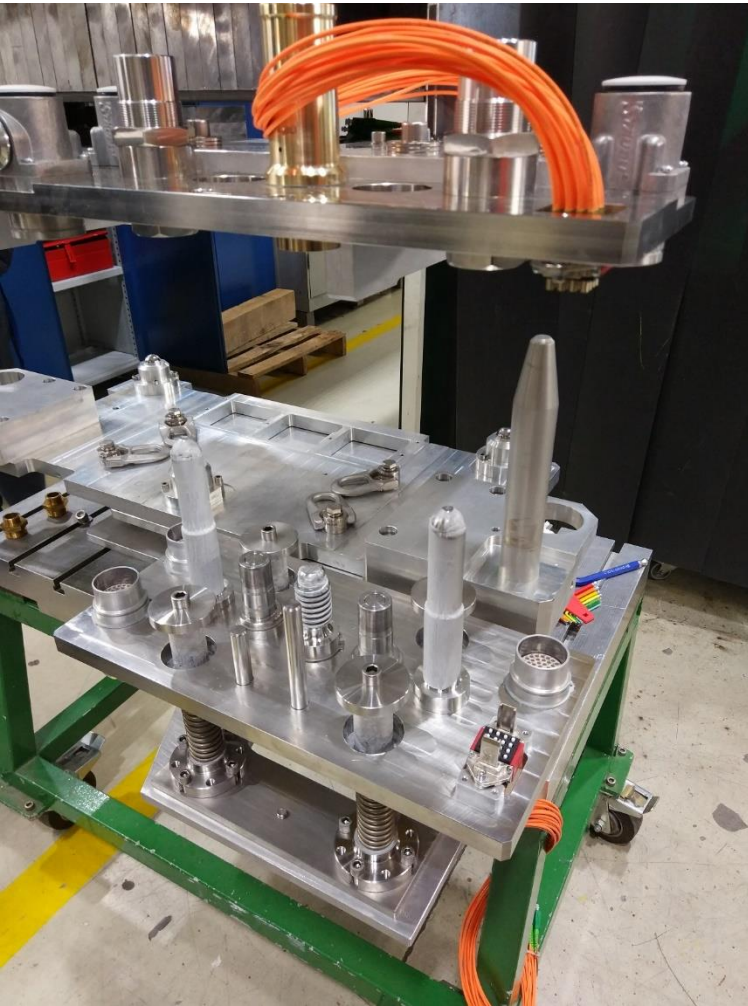
FISCHER concept:

- 9 exchangeable coaxial inserts
- Base on springs



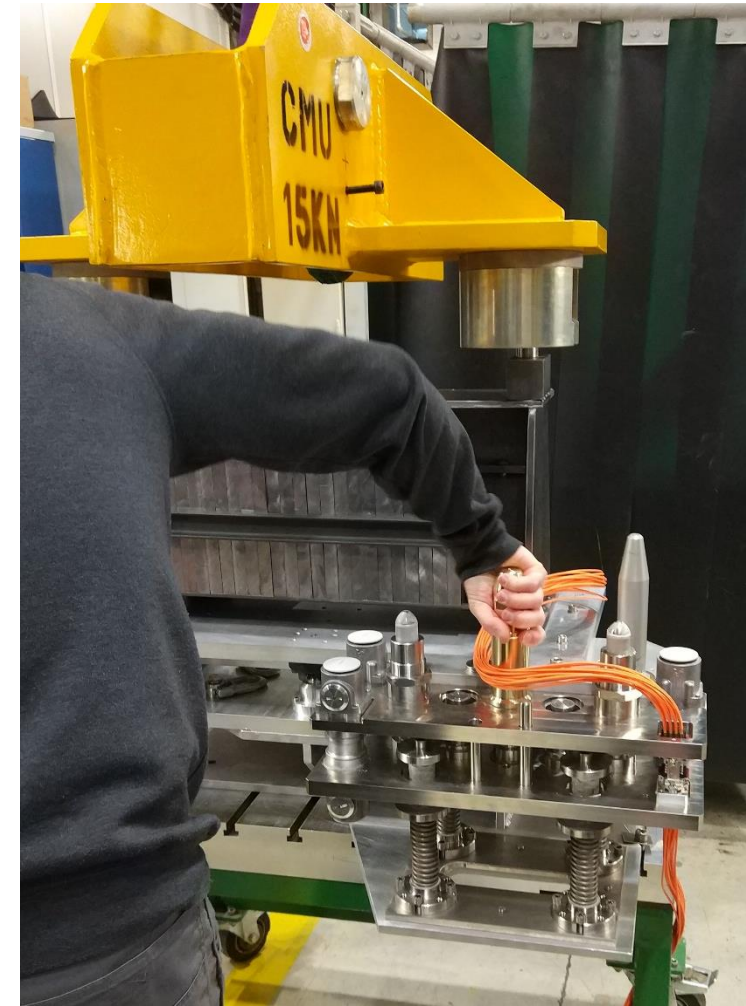
In between, change of concept at cern (motivated by the use of metallic gaskets for the water plugins).

Plugin concept for the BDF made by Staubli is tested at CERN in march 2018



All connections are centralized on a separate plate with independent coupling.

Plates can be screwed by a robot.



Summary

- The BPM connectors are needed for LS2;
- The future concept based on the BDF is not ready;
- Where and how can we install the BPM plugins ?

