

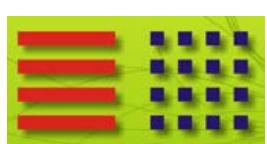
DEPFET



Phase 2 PXD Half Shell Assembly

T. Ackermann, C. Kiesling

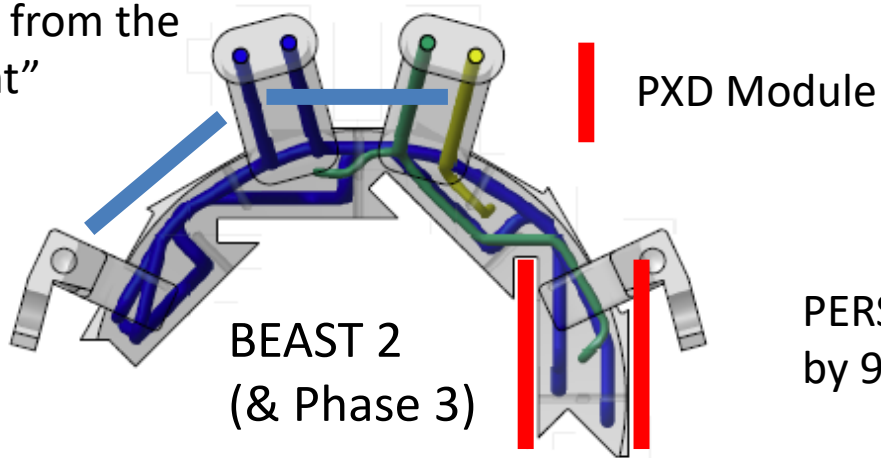
Actors: E. Töpper, Chr. Knust



Support of PXD modules for Phase 2

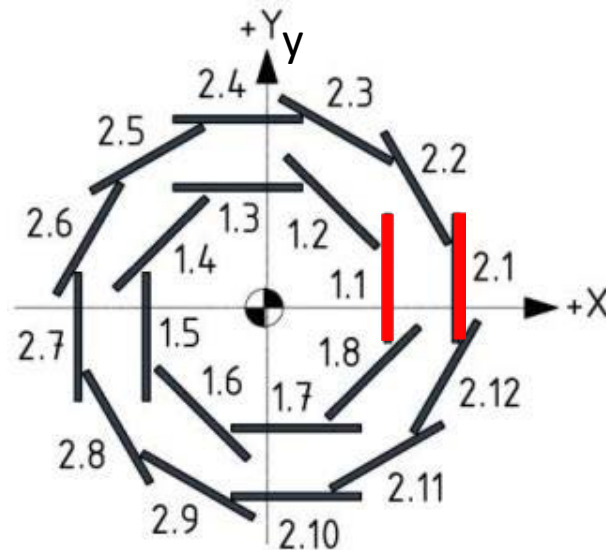
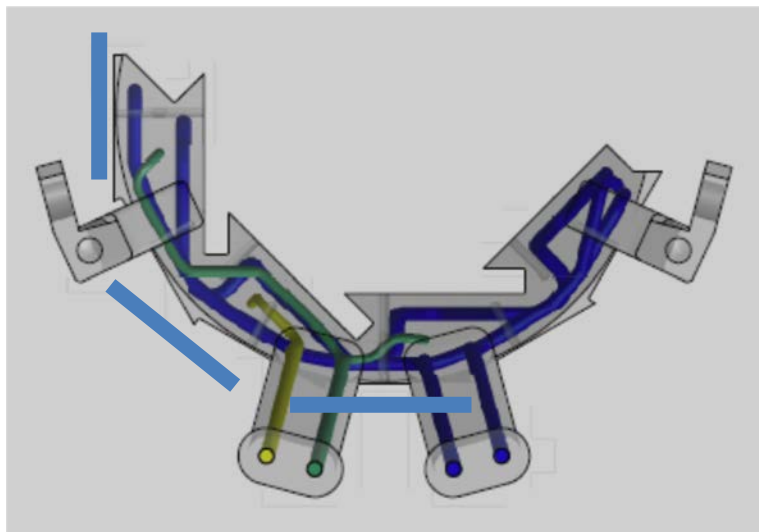
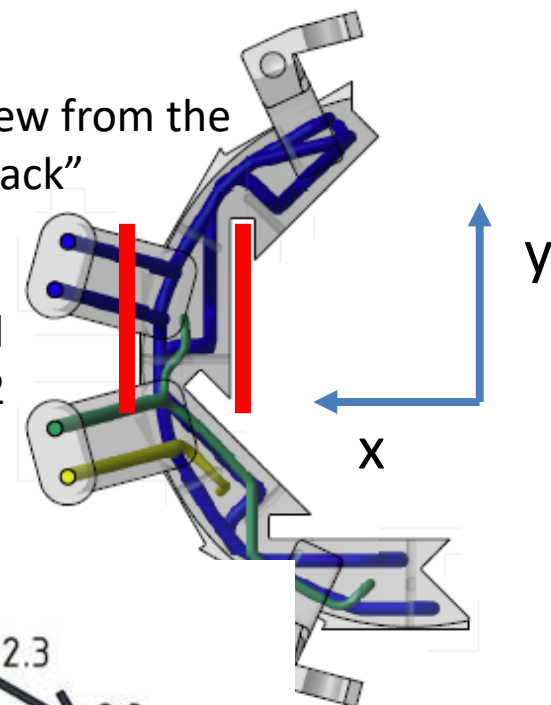


View from the
"front"



View from the
"back"

PERSY: SCB rotated
by 90° wrt BEAST 2

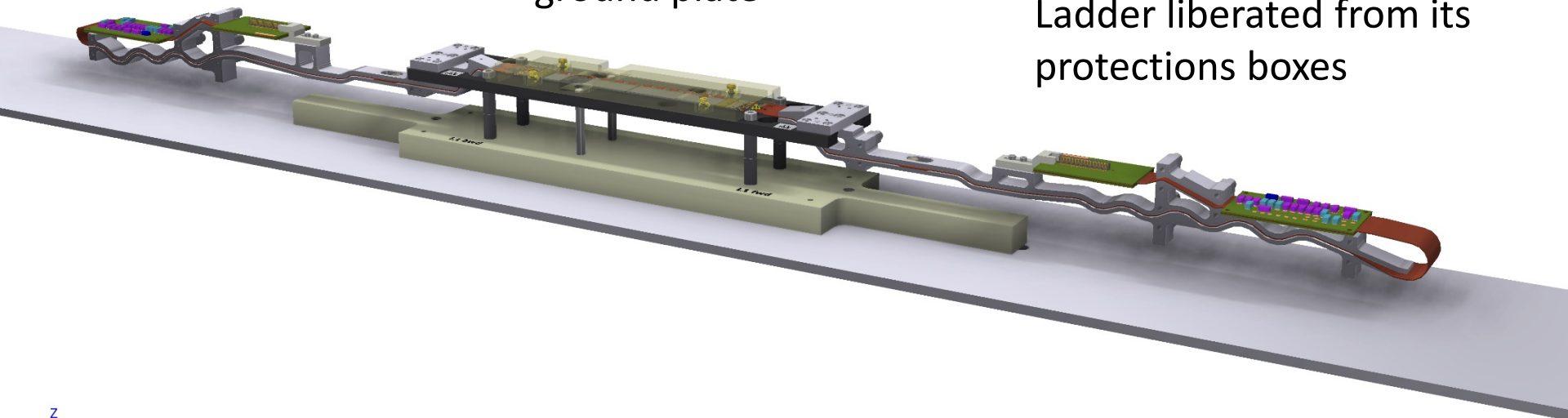


Ladder Mounting Sequence L1

Procedure presented at Ringberg
(unless otherwise explicitly stated, procedure applies to both
Phase 2 and Phase 3)

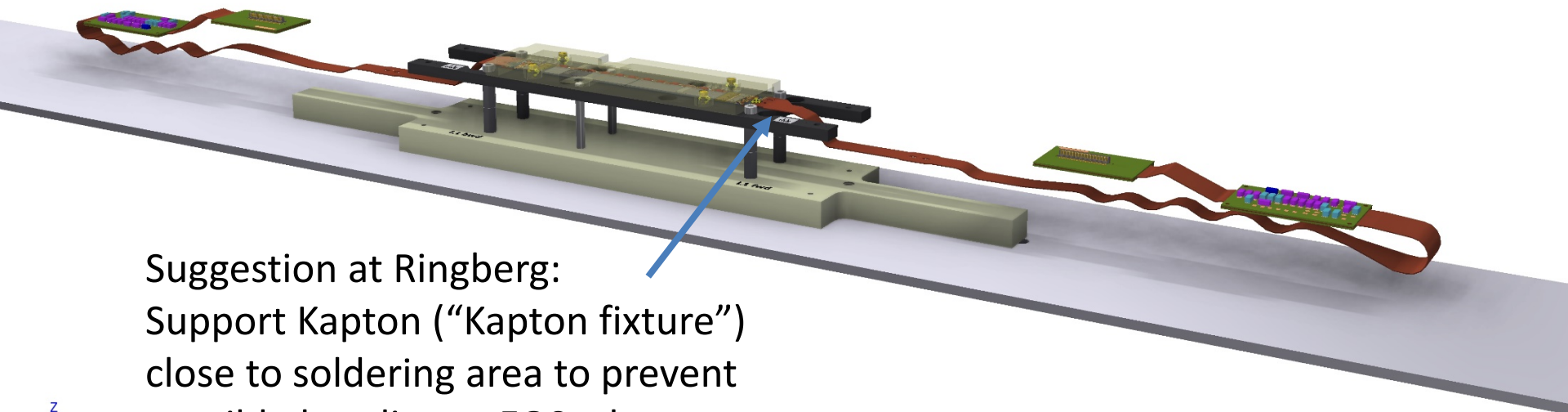
Transport jig fixed to
ground plate

Ladder liberated from its
protections boxes



Ladder Mounting Sequence L1

Kapton jigs removed



Suggestion at Ringberg:
Support Kapton (“Kapton fixture”)
close to soldering area to prevent
possible bending at EOS when
removing Kapton jig



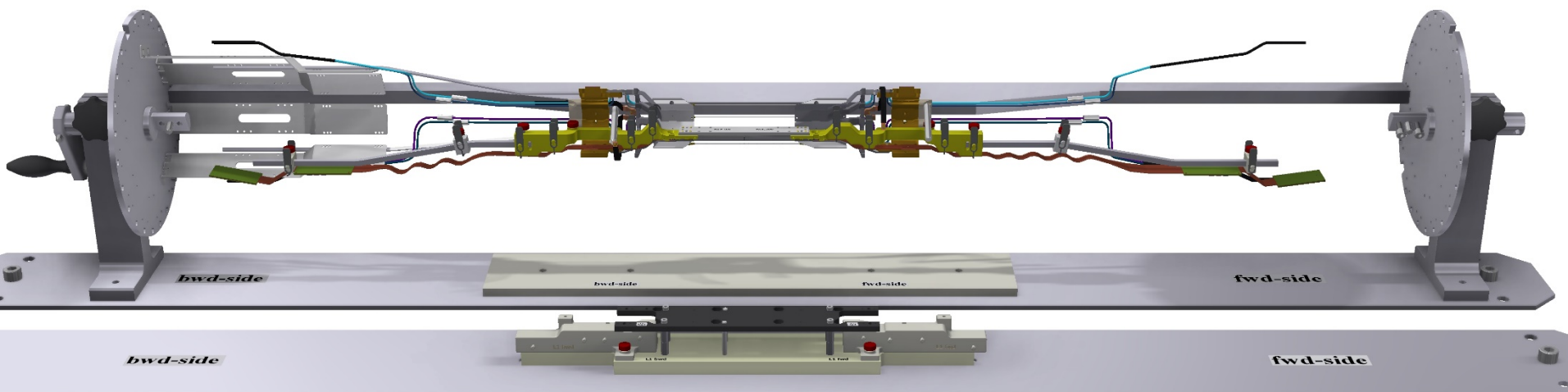
Ladder Mounting Sequence L1

“lift off” by hand



Ladder Mounting Sequence L1

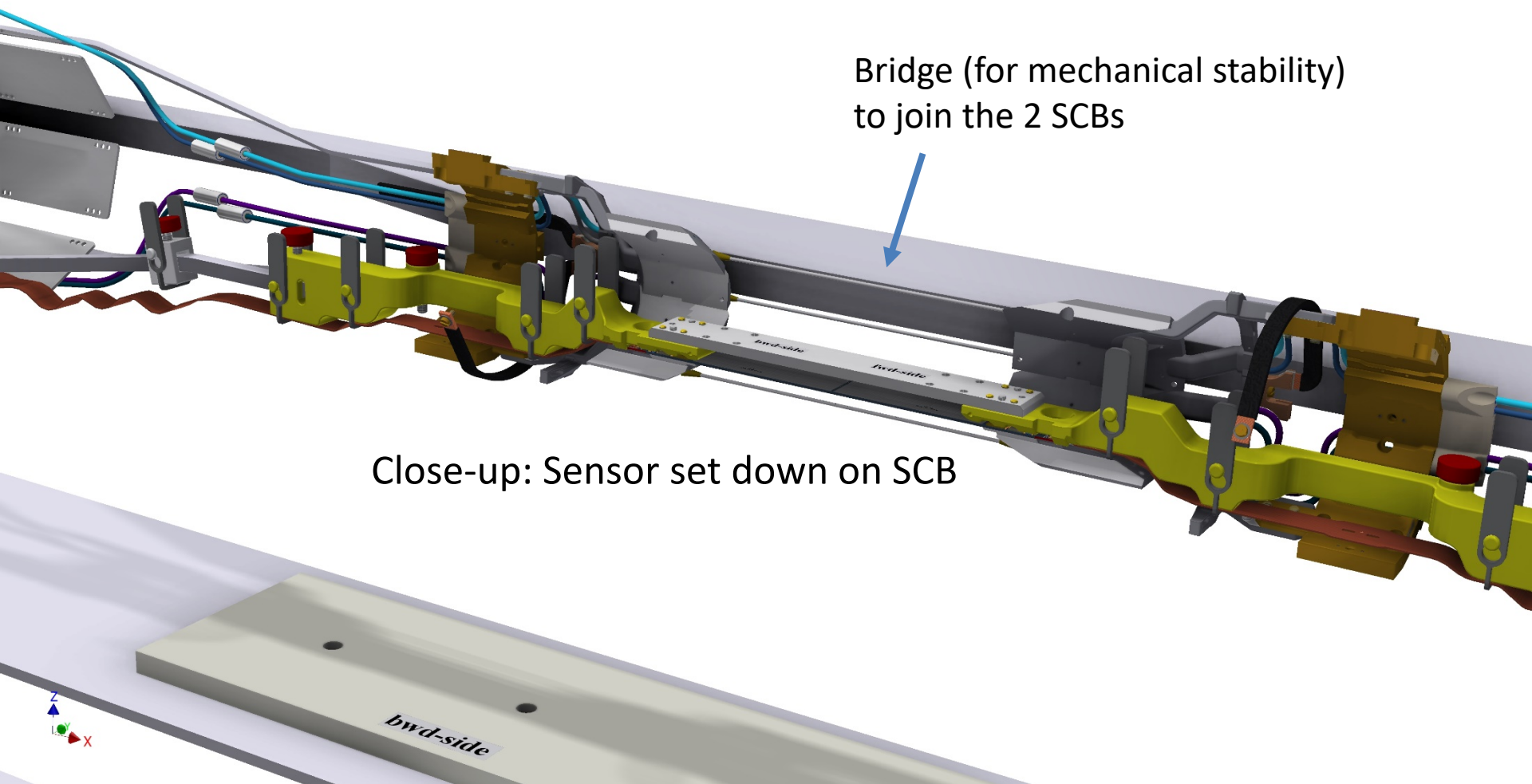
Set ladder jig down on SCB by hand



Rotatable stage with SCB half-shell fixed
on SCB supports

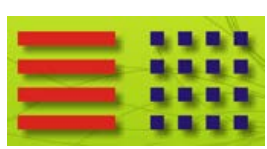


Ladder Mounting Sequence L1

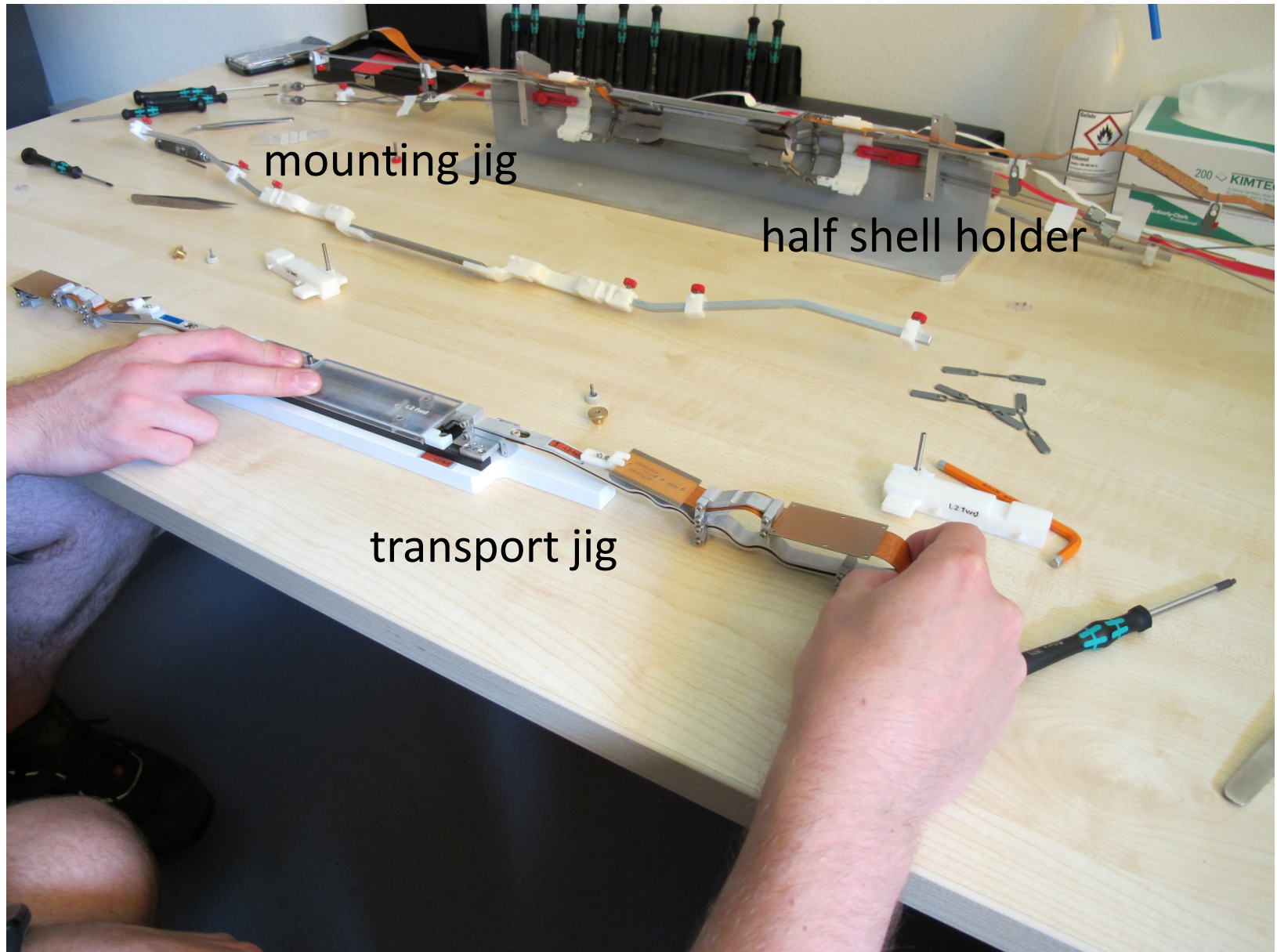


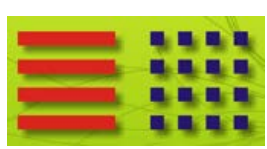
Bridge (for mechanical stability)
to join the 2 SCBs

Close-up: Sensor set down on SCB

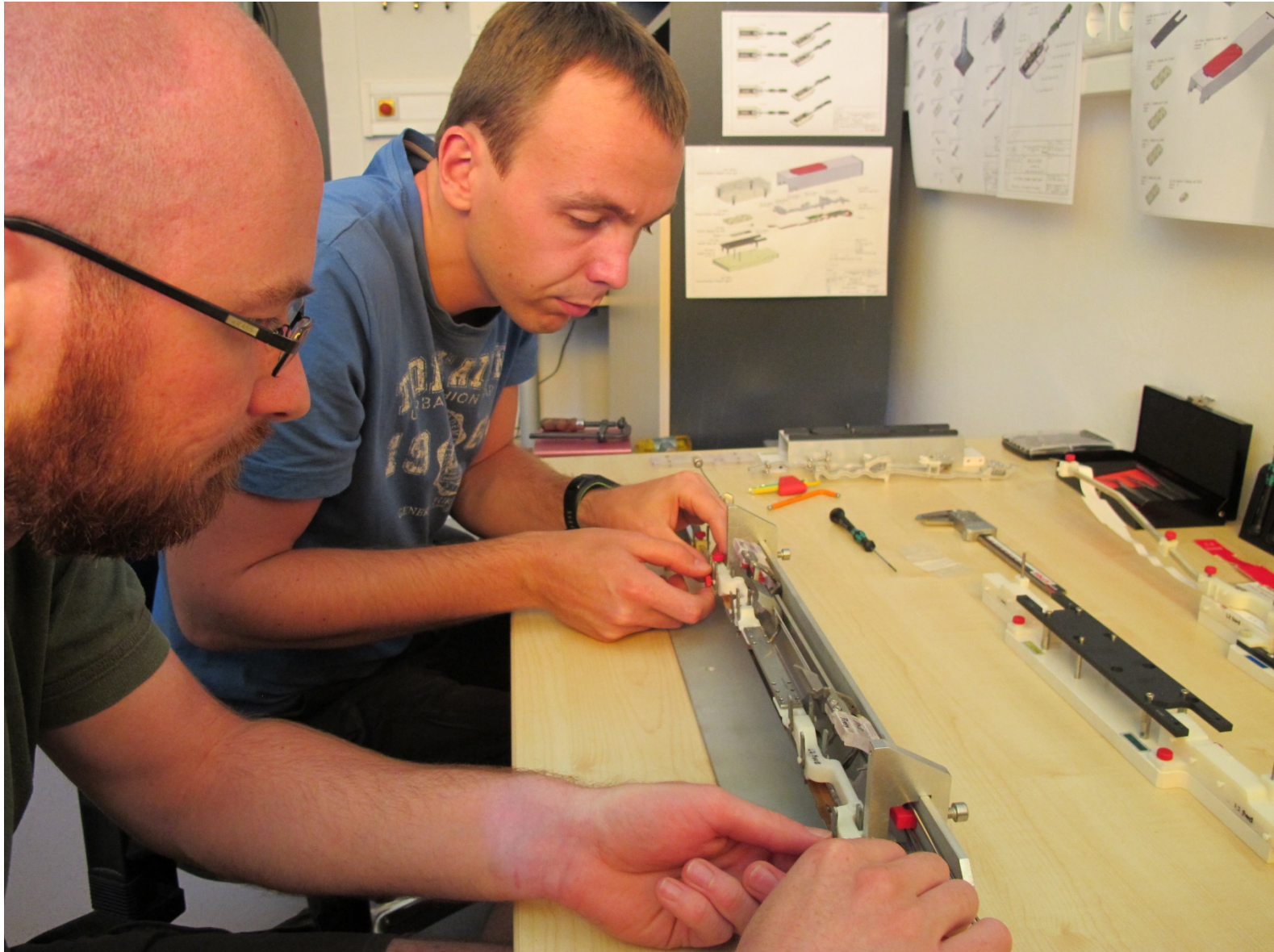


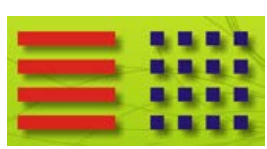
View of Jigs for the Mounting



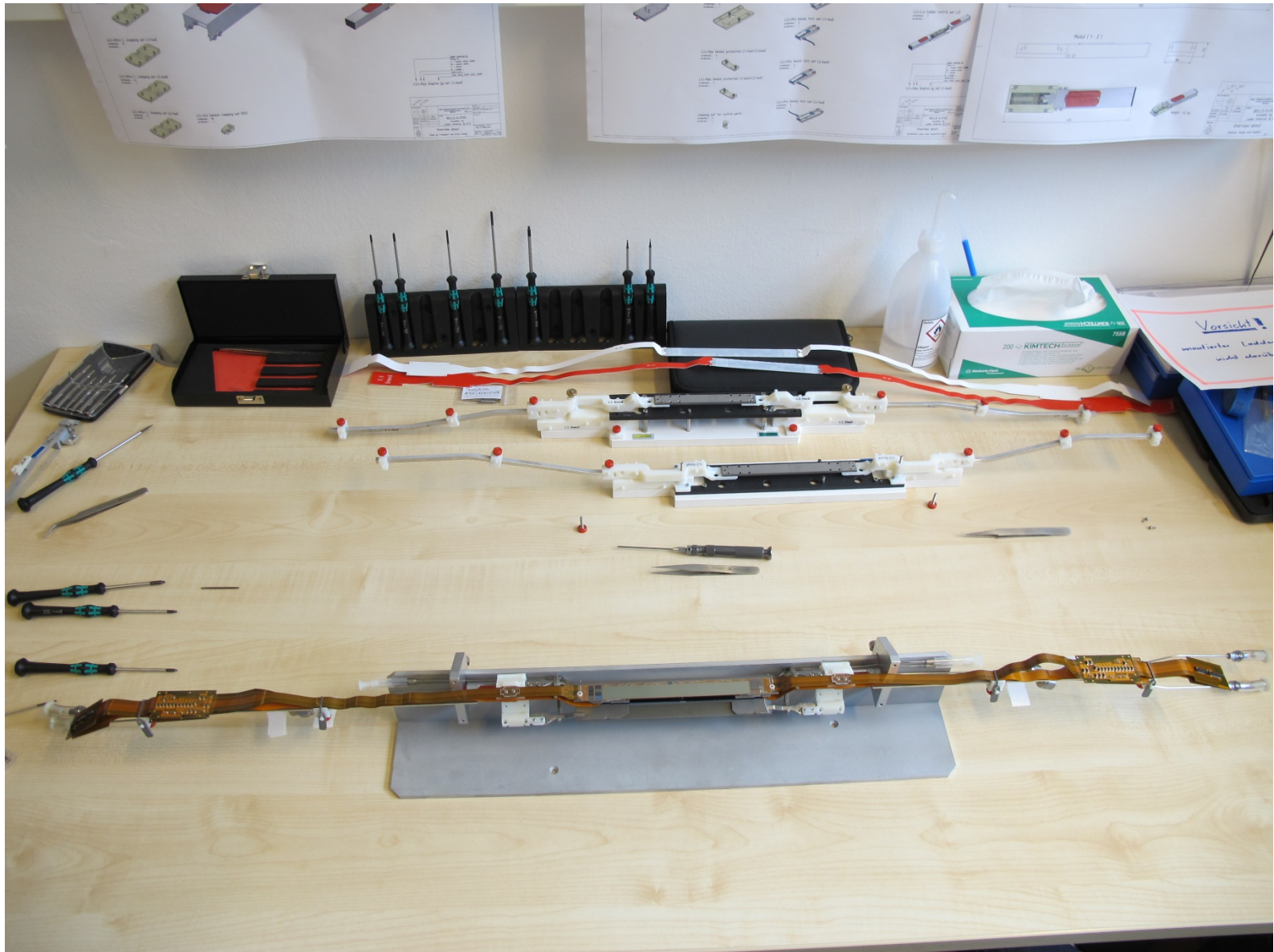


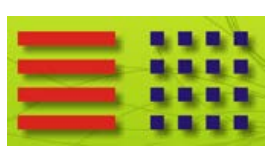
Installation of Ladder in Mounting Jig



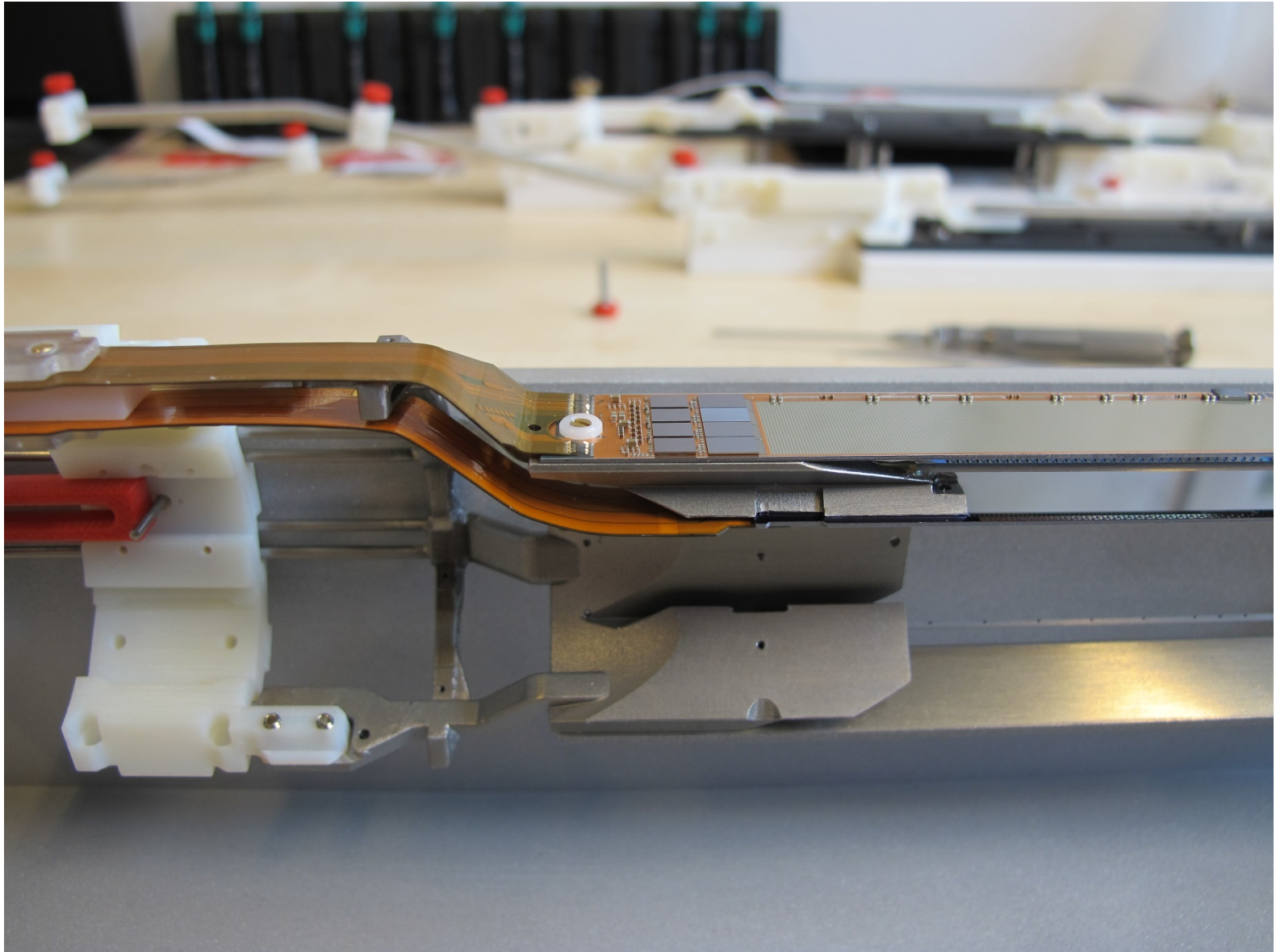


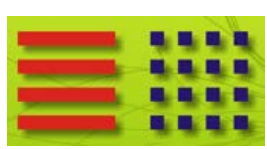
Fully Installed Ladders (1 and 2)



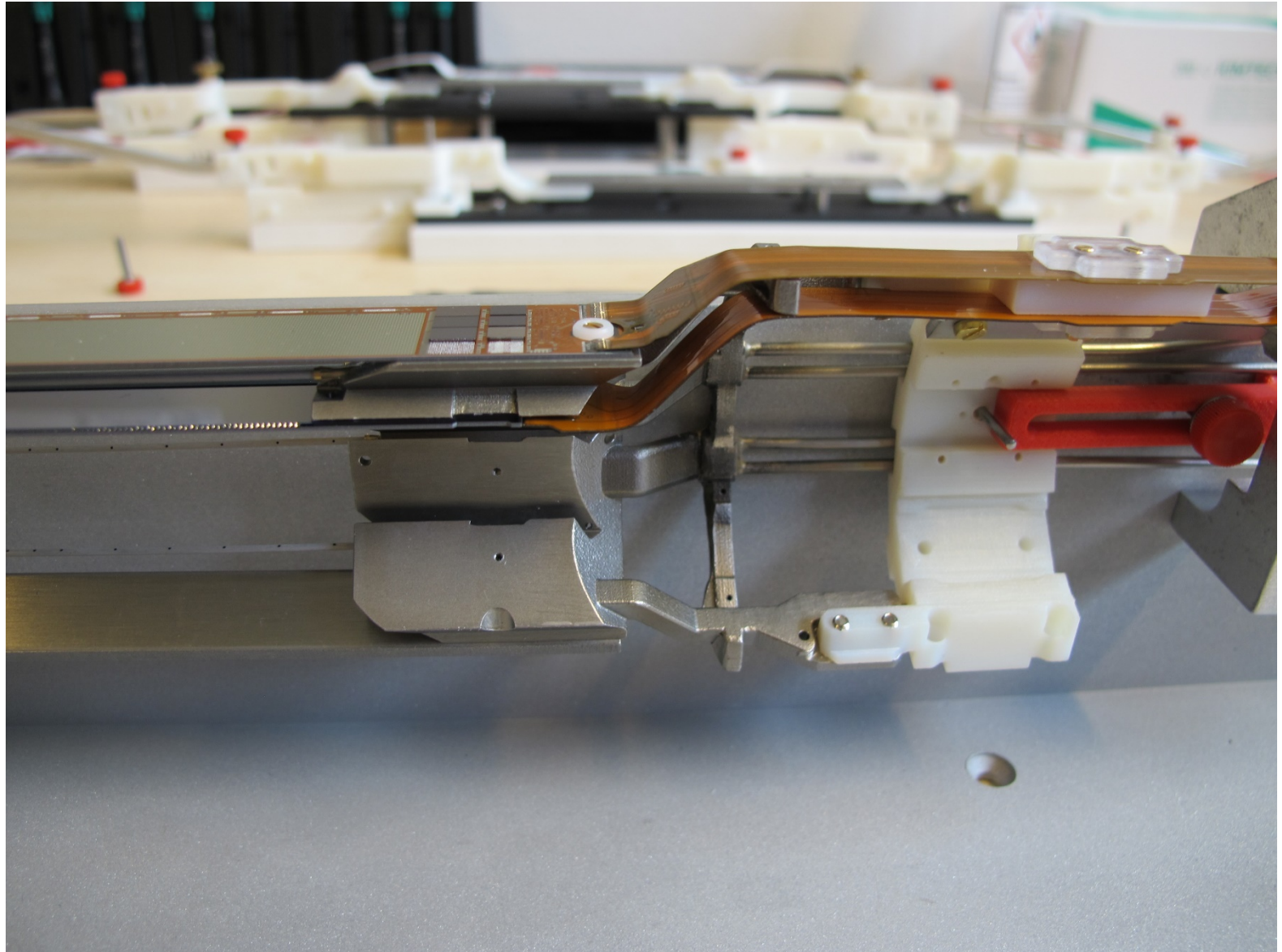


Fully Installed Ladders (FWD Side)

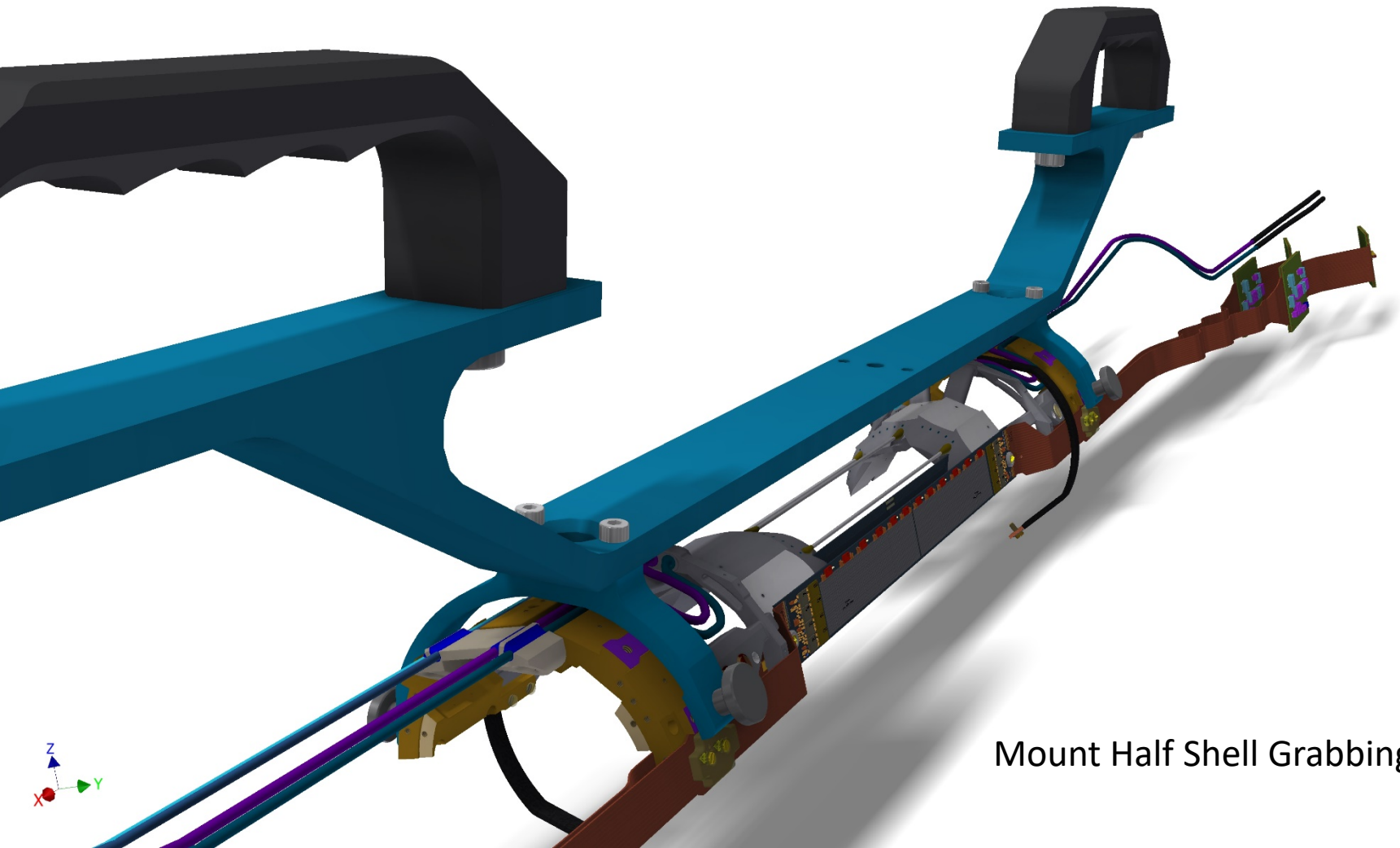




Fully Installed Ladders (BWD Side)

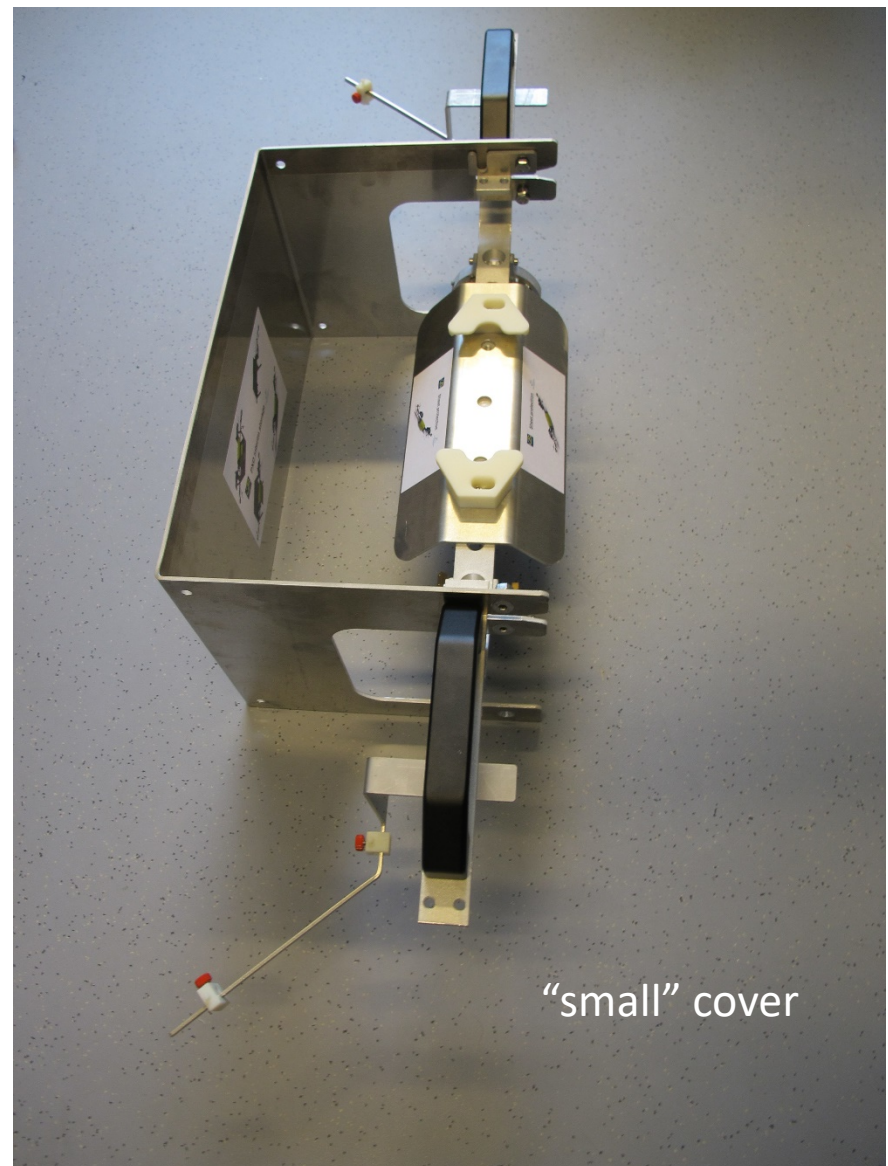
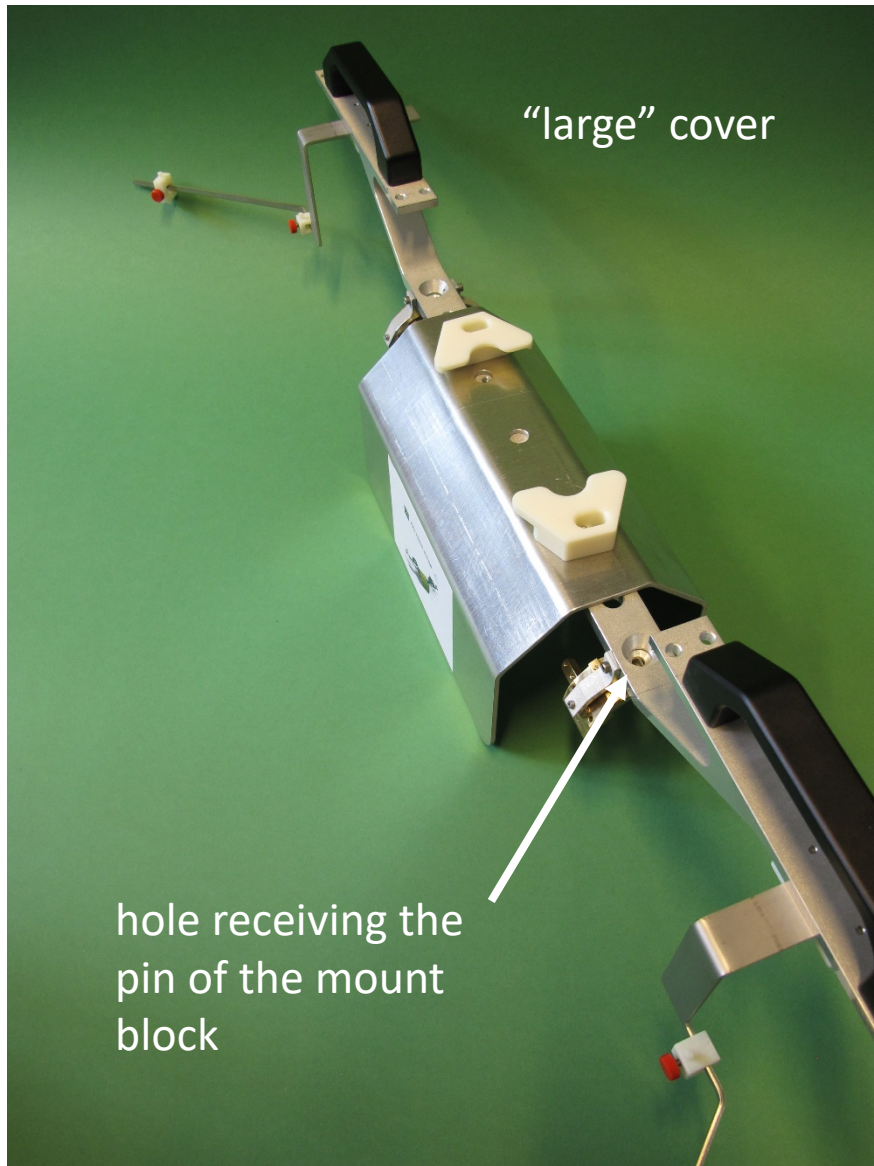


Half Shell Installation: Grabbing Tool



Mount Half Shell Grabbing Tool

Half Shell Grabbing Tool

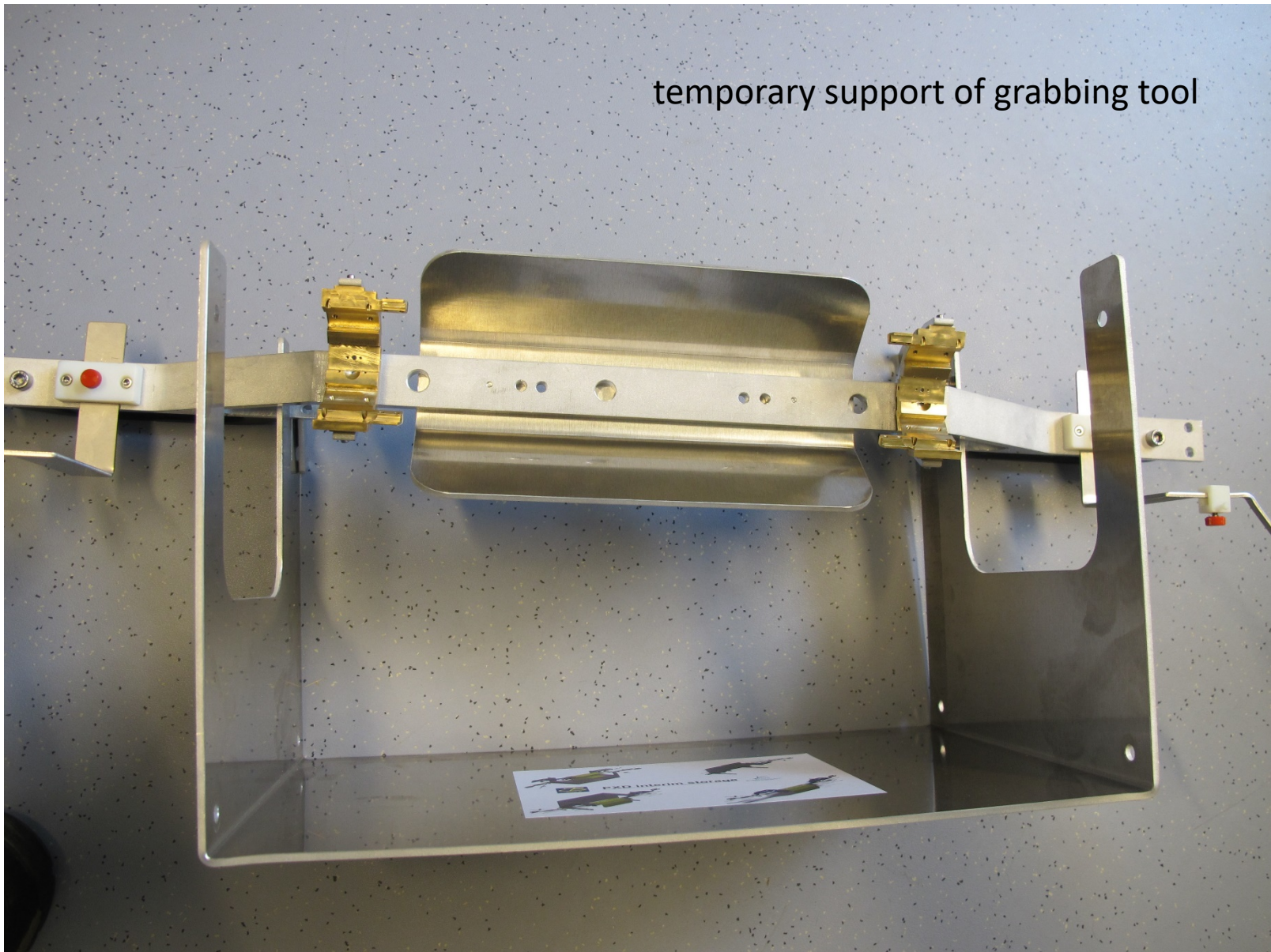


Half Shell Grabbing Tool

“large” cover, able to stand on the table / floor

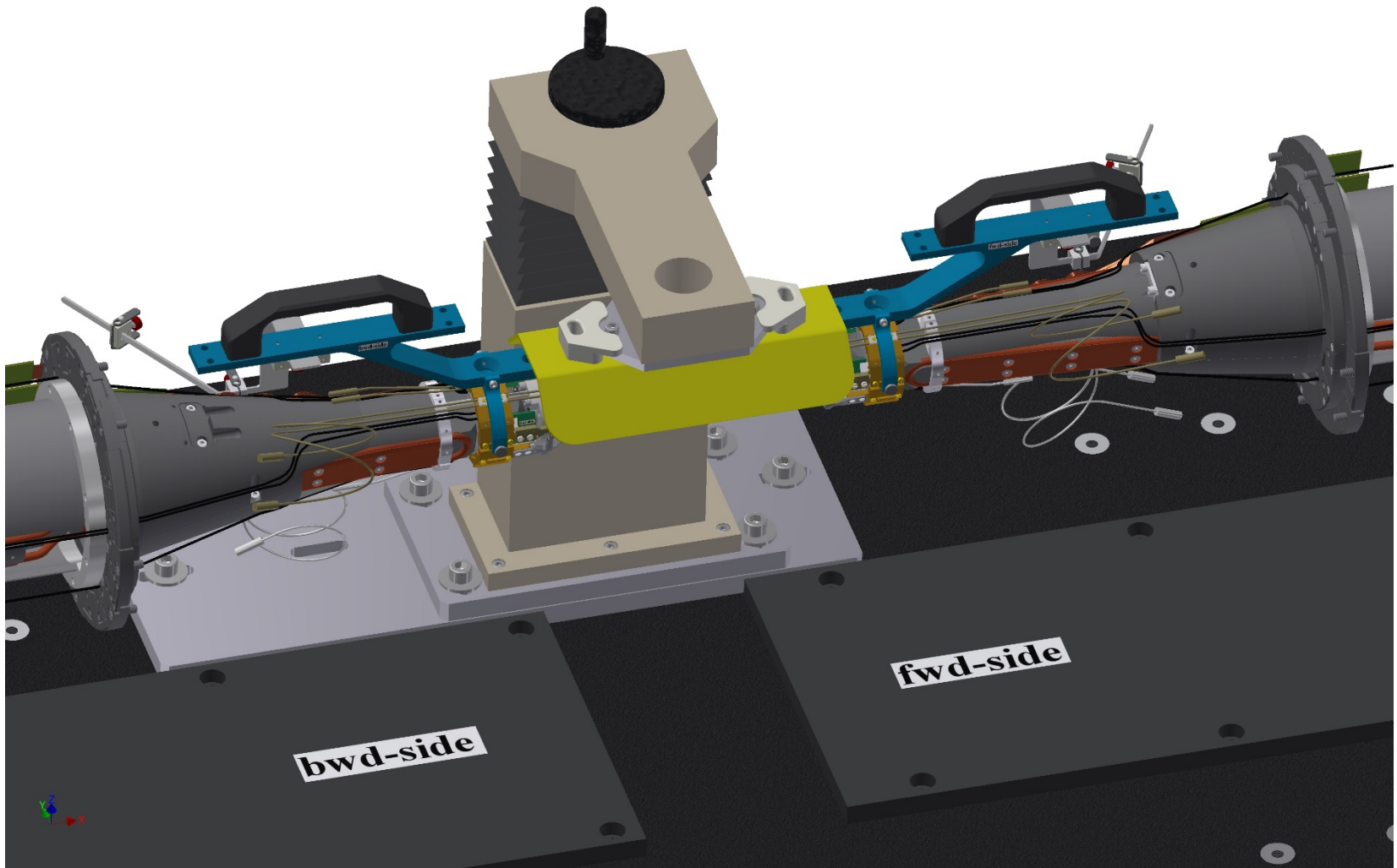


Half Shell Grabbing Tool

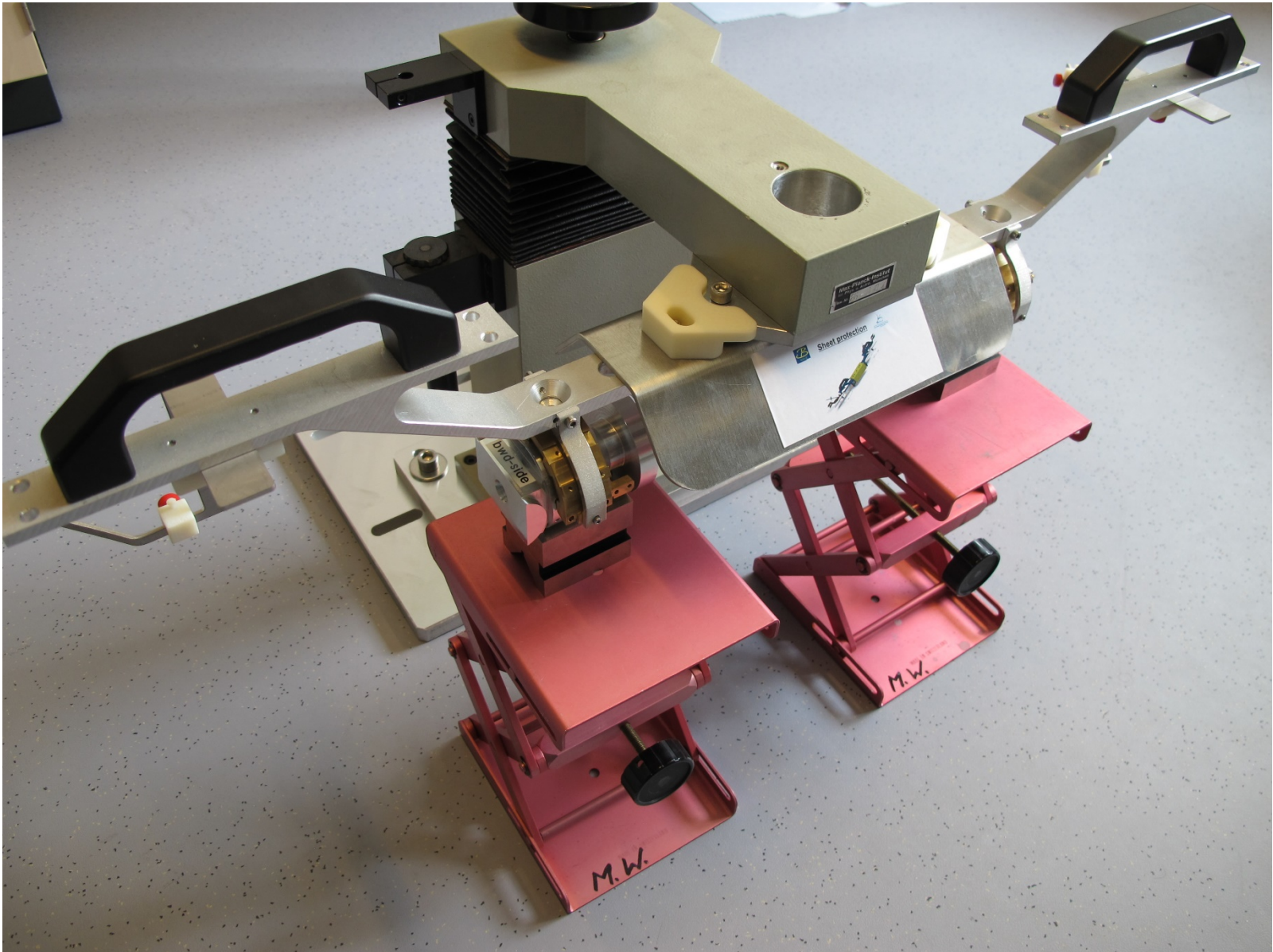


Half Shell Installation

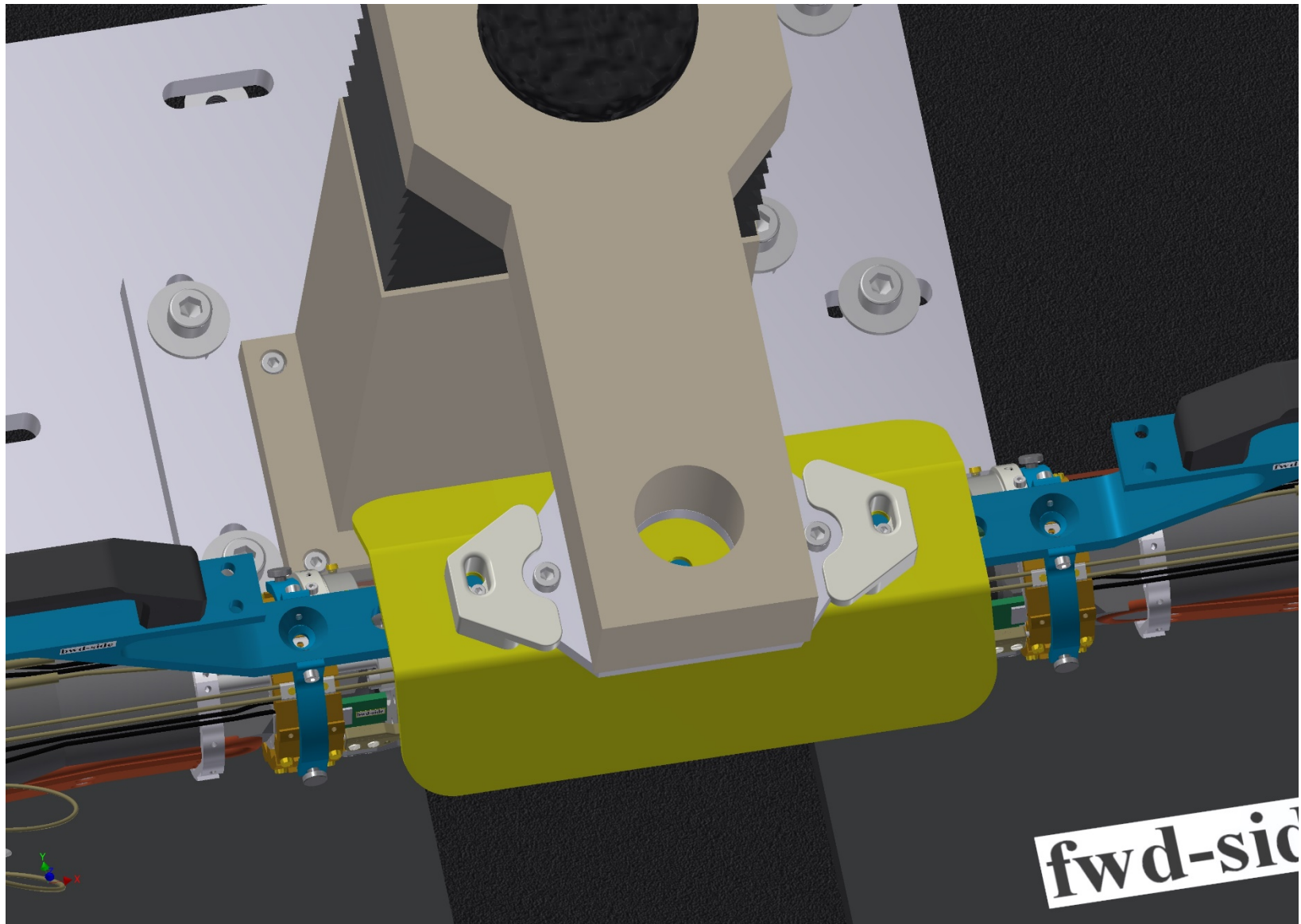
Lowering mechanism



Half Shell Installation

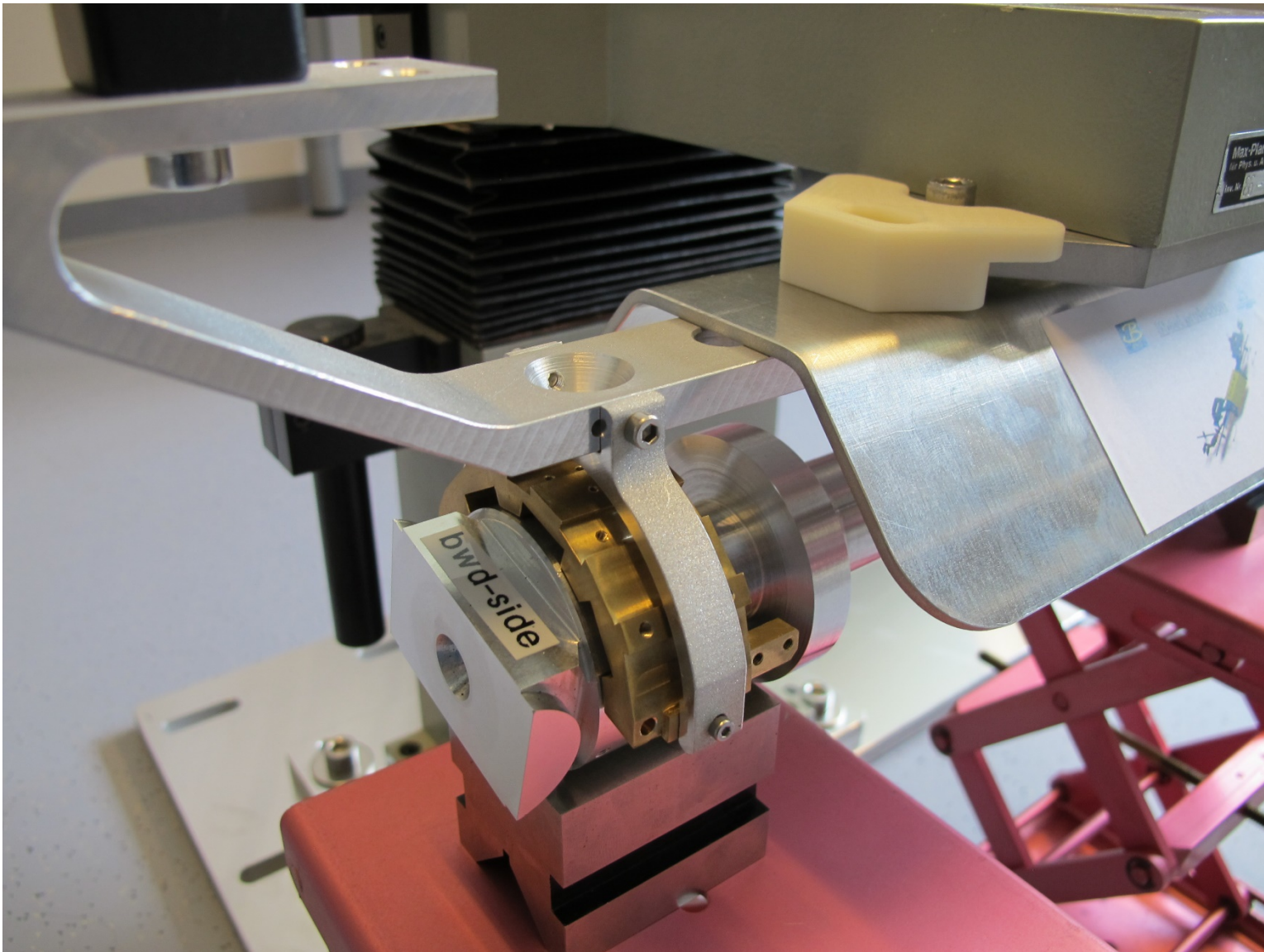


Half Shell Installation

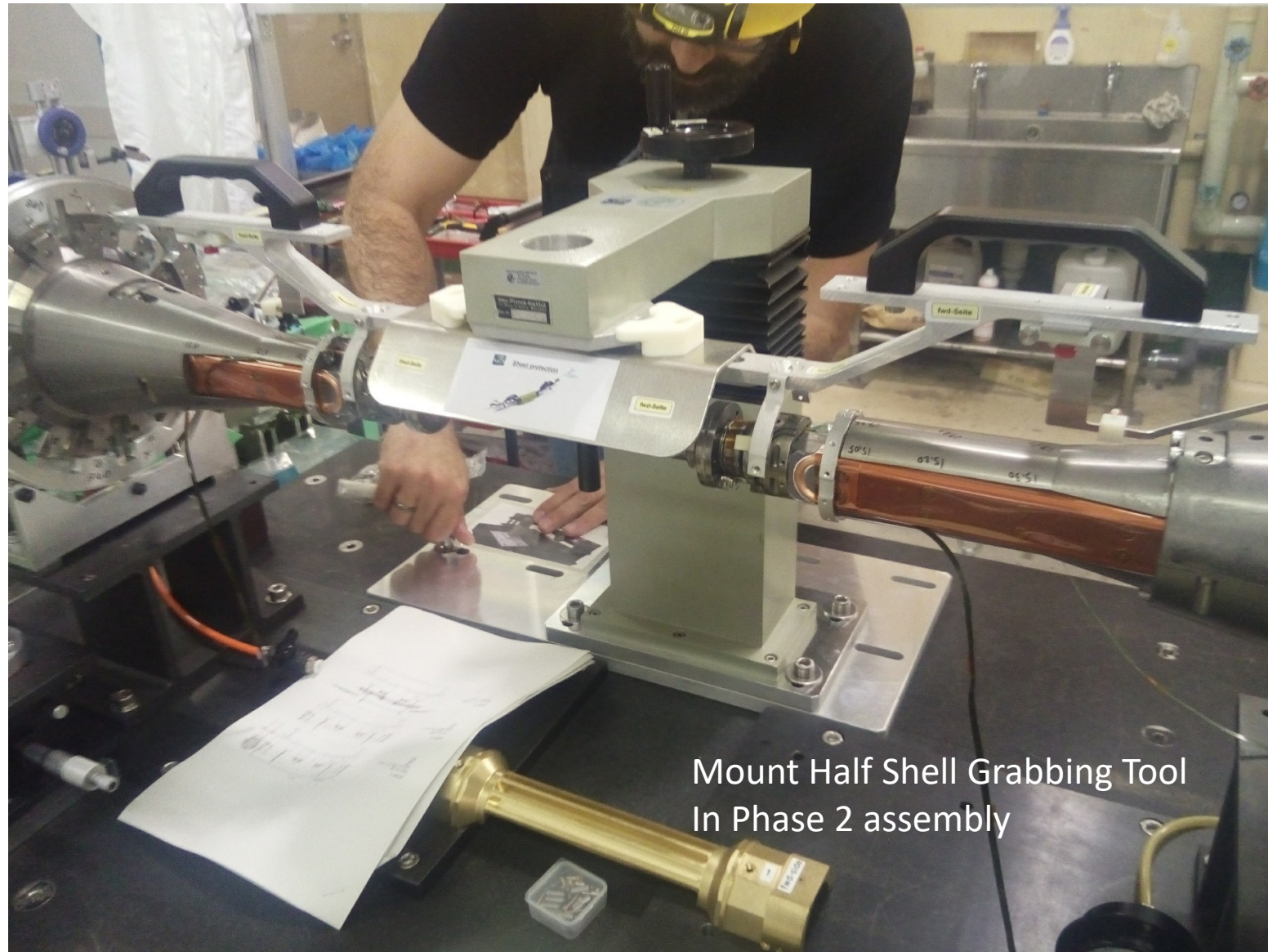


fwd-sic

Half Shell Installation



Phase 2 Installation

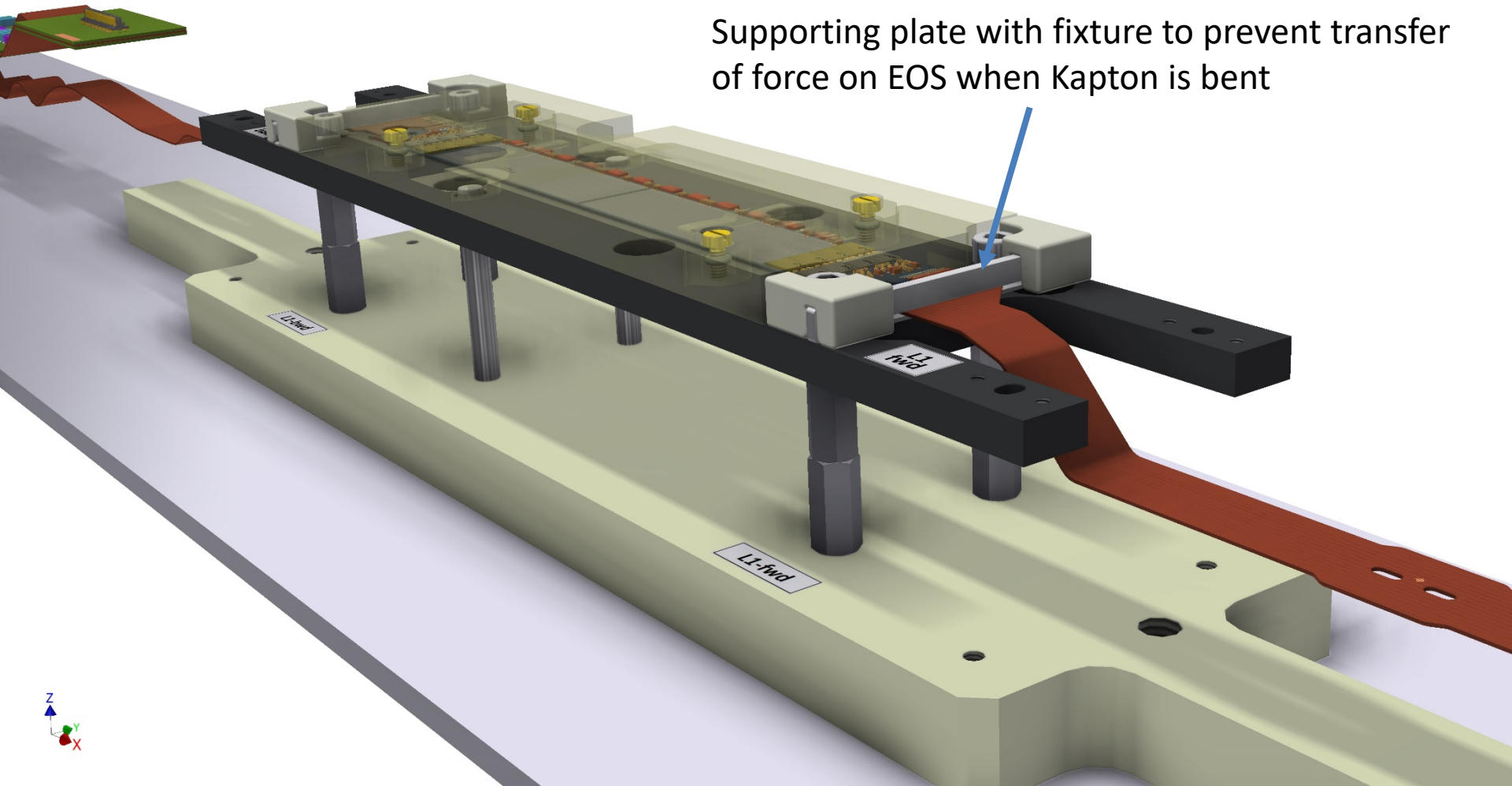


Mount Half Shell Grabbing Tool
In Phase 2 assembly

- Final ladder mounting procedure for Phase 2 has been exercised successfully with dummy and „semi-hot“ ladders
- Mounting tools have been optimized (post-Ringberg modifications)
- Two trained technicians co-operating in the full procedure
- Mounting of Phase 3 Ladders ready on CAD level, tools to be manufactured in MPI workshop
- Three inner ladders available for realistic mounting tests
- Tools for half shell mounting on beampipe ready to be used

Backup

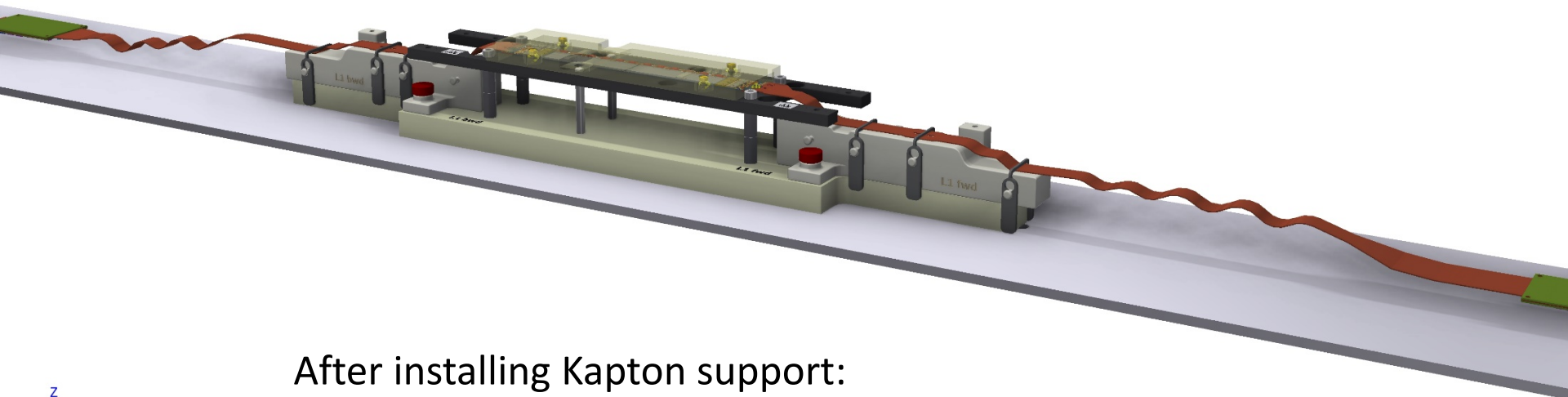
Ladder Mounting Sequence L1



Ladder Mounting Sequence L1

Push in Kapton support structure (3D printed)

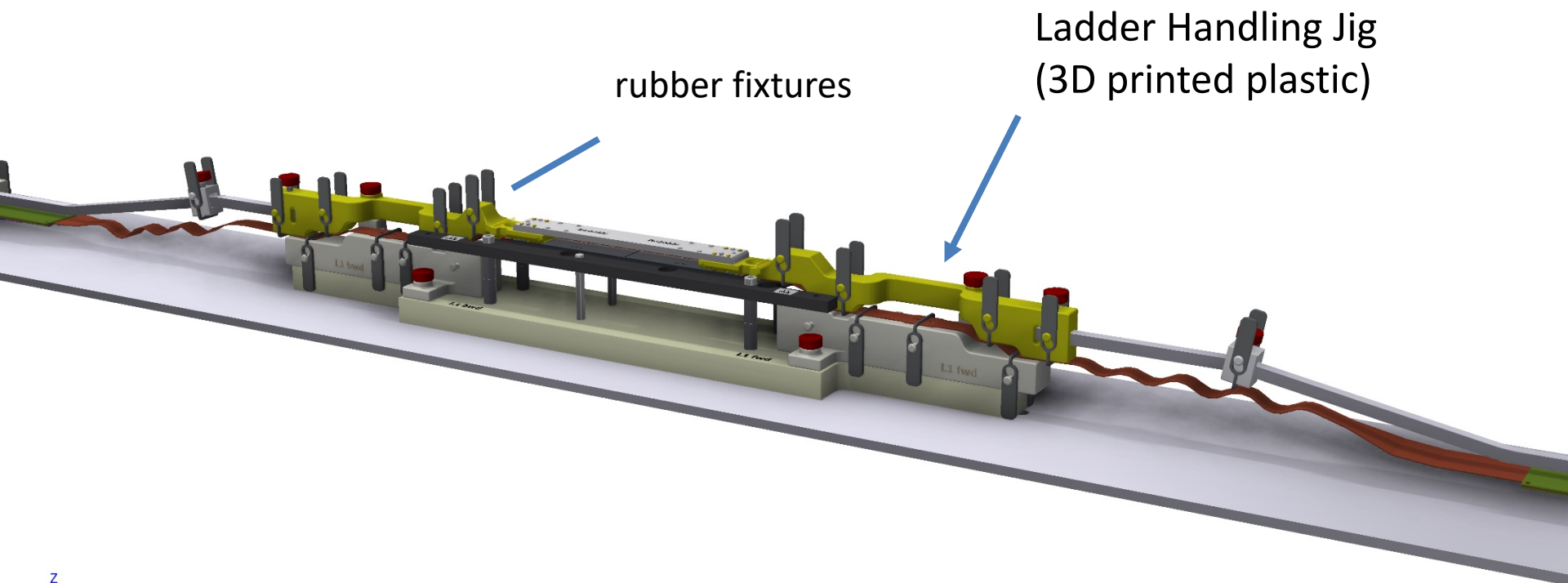
New: rubber fixtures (instead of vacuum)



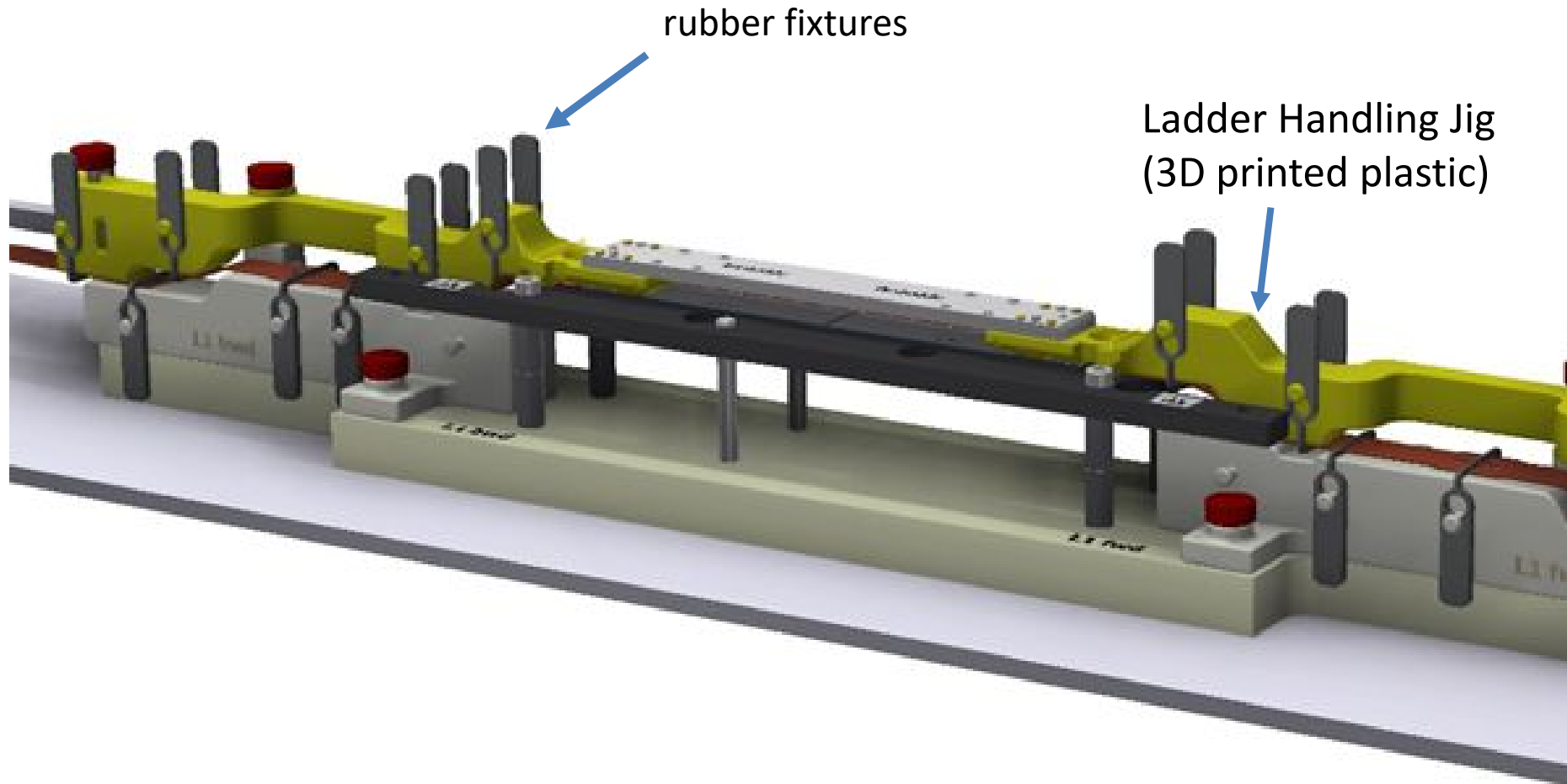
After installing Kapton support:
remove Kapton fixture



Ladder Mounting Sequence L1

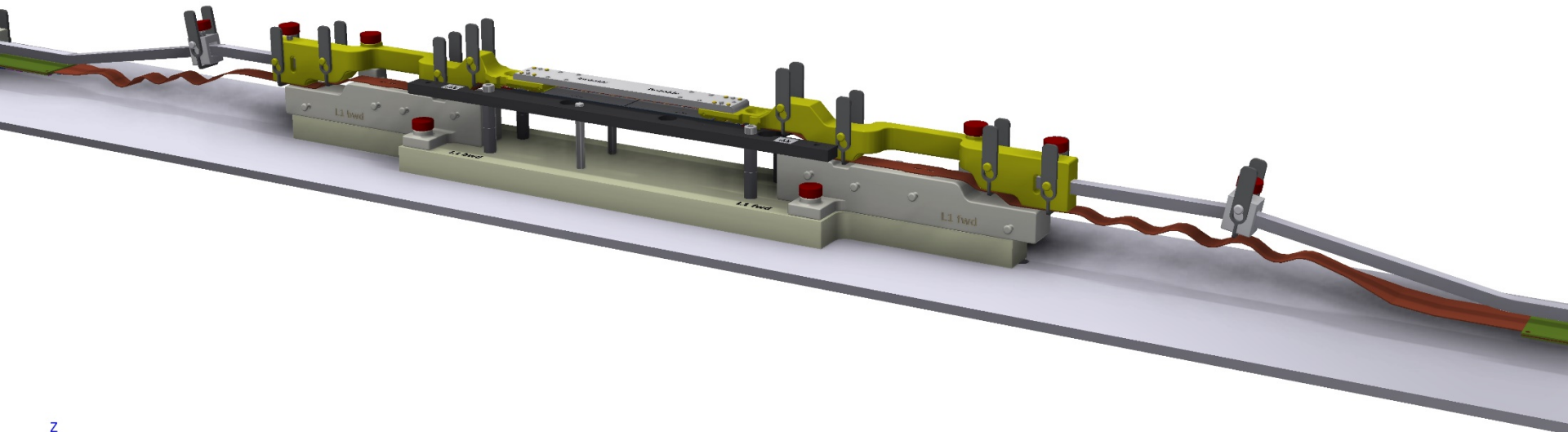


Ladder Mounting Sequence L1

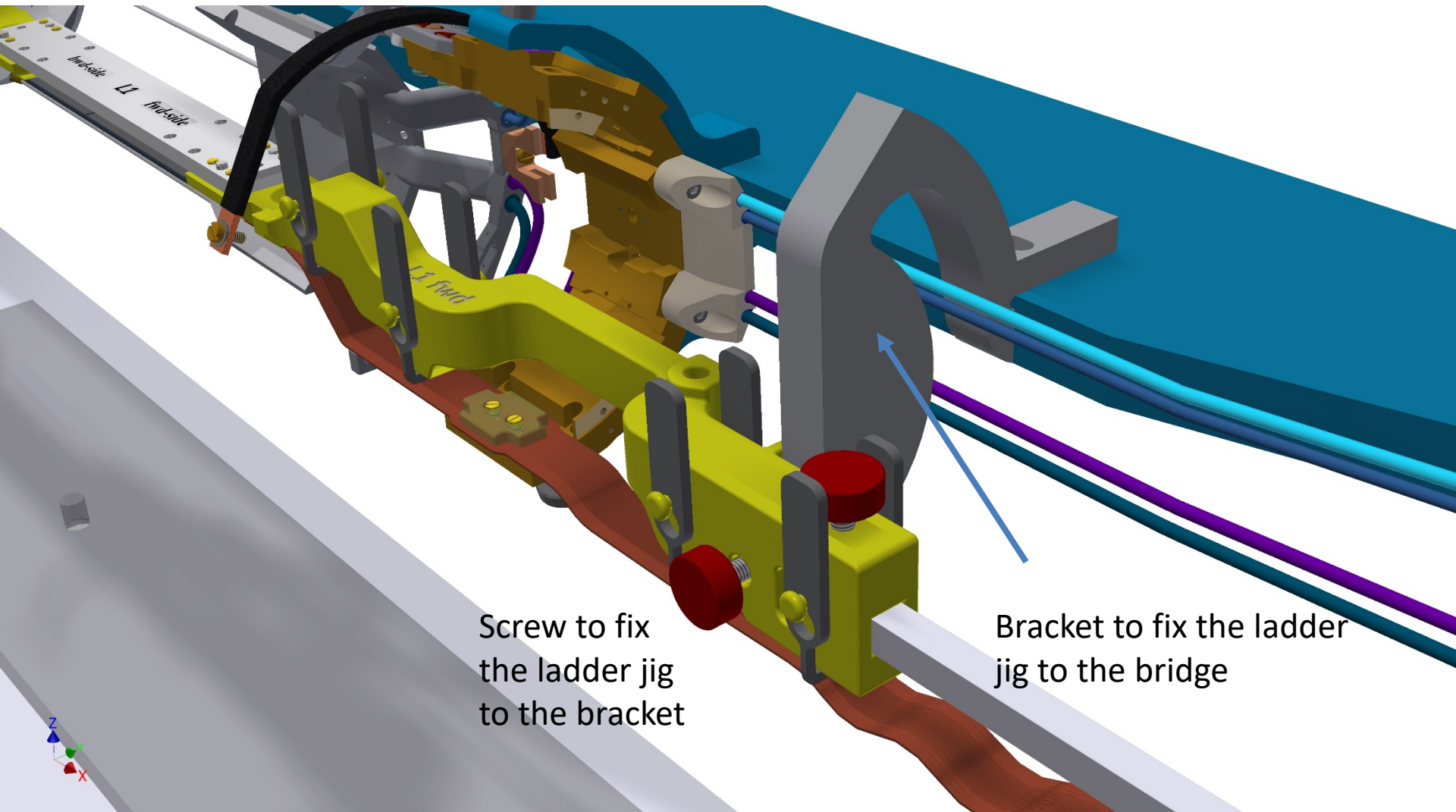


Ladder Mounting Sequence L1

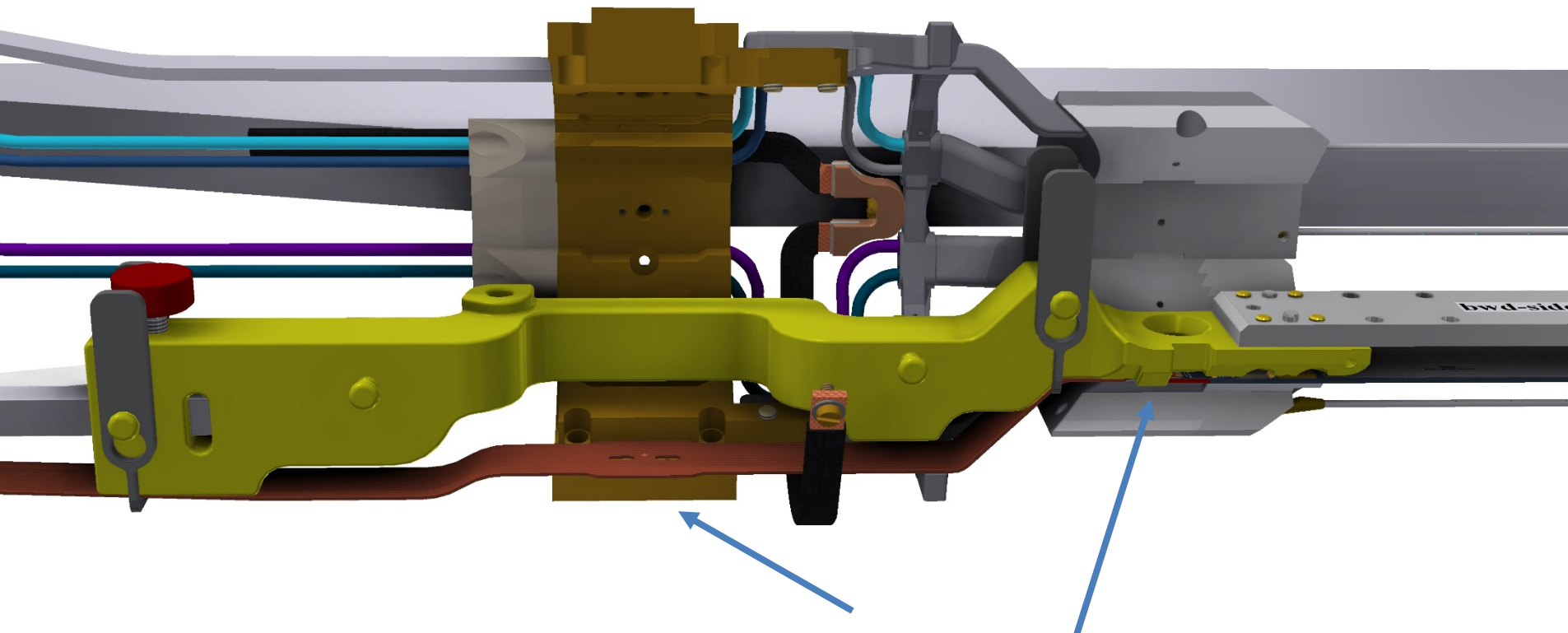
Remove rubber fixtures from Kapton jig



Ladder Mounting Sequence L1



Ladder Mounting Sequence L1

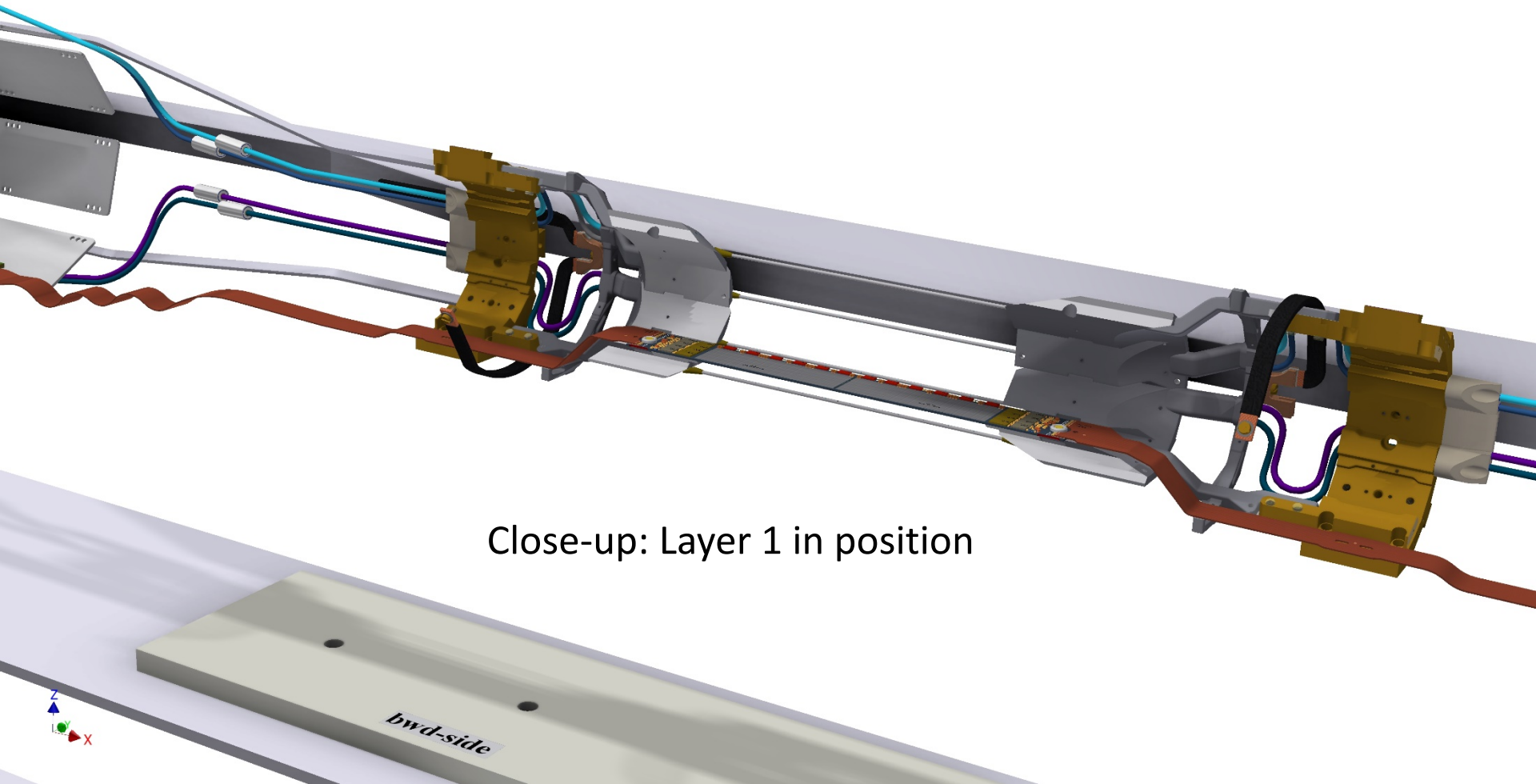


Next actions:

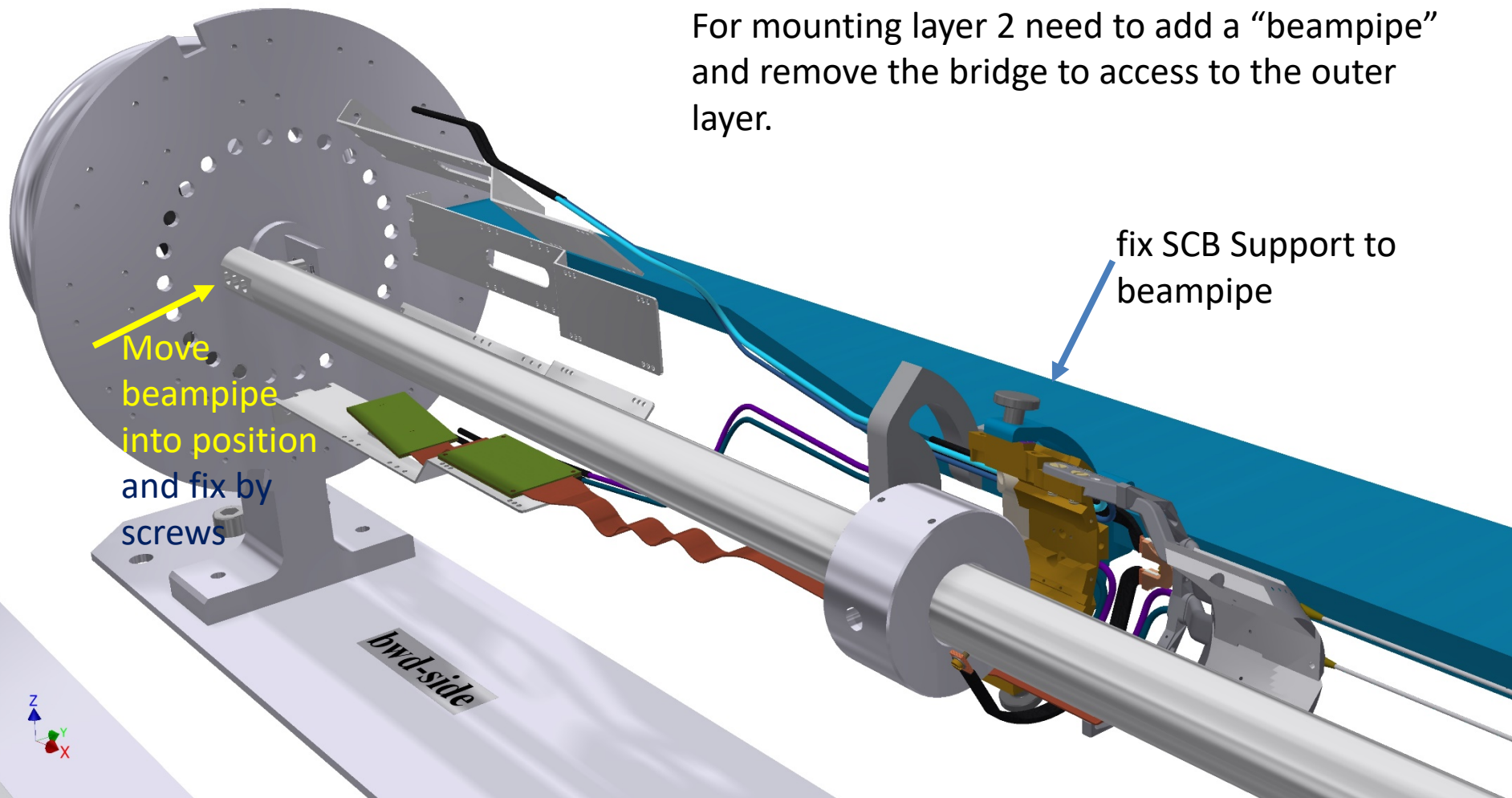
- fix Kapton and sensor by screws,
- cut the rubber bands
- remove screws from bracket
- lift ladder jig upwards



Ladder Mounting Sequence L1



Ladder Mounting Sequence L2



For mounting layer 2 need to add a “beampipe” and remove the bridge to access to the outer layer.

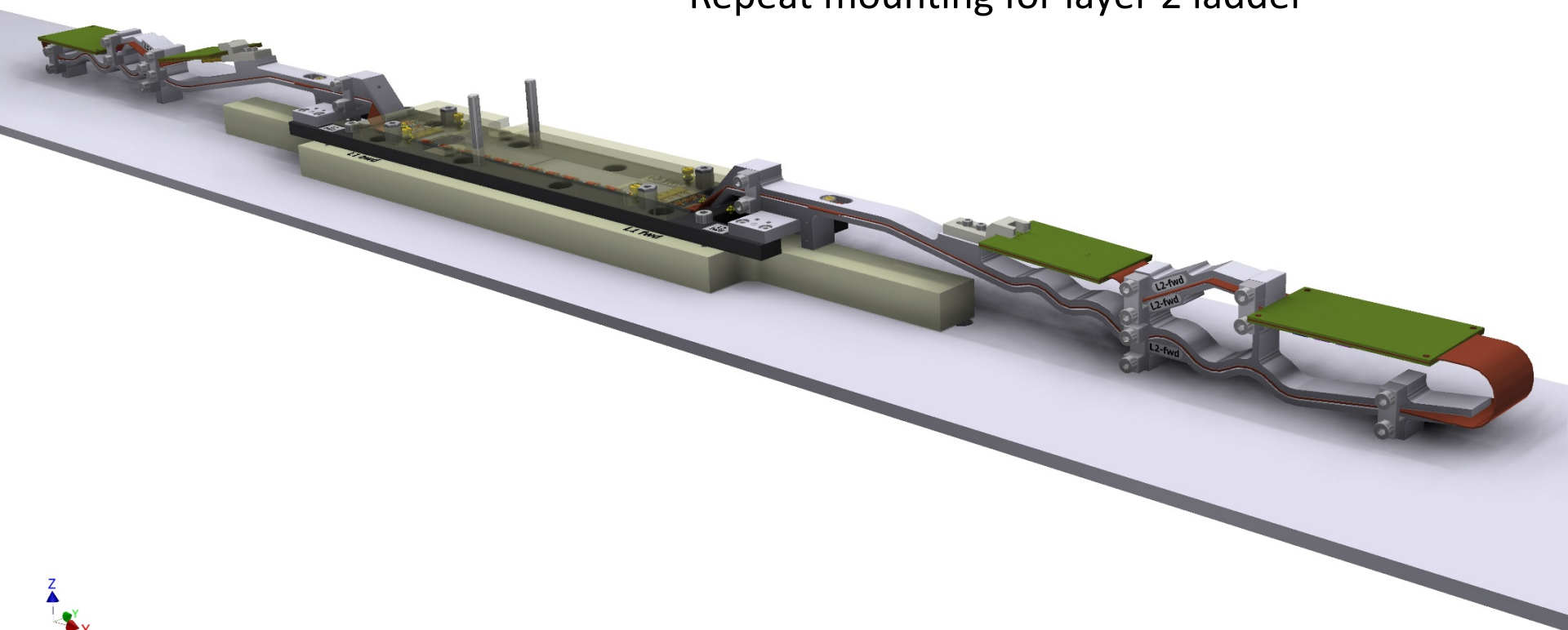
fix SCB Support to beampipe

Move beampipe into position and fix by screws

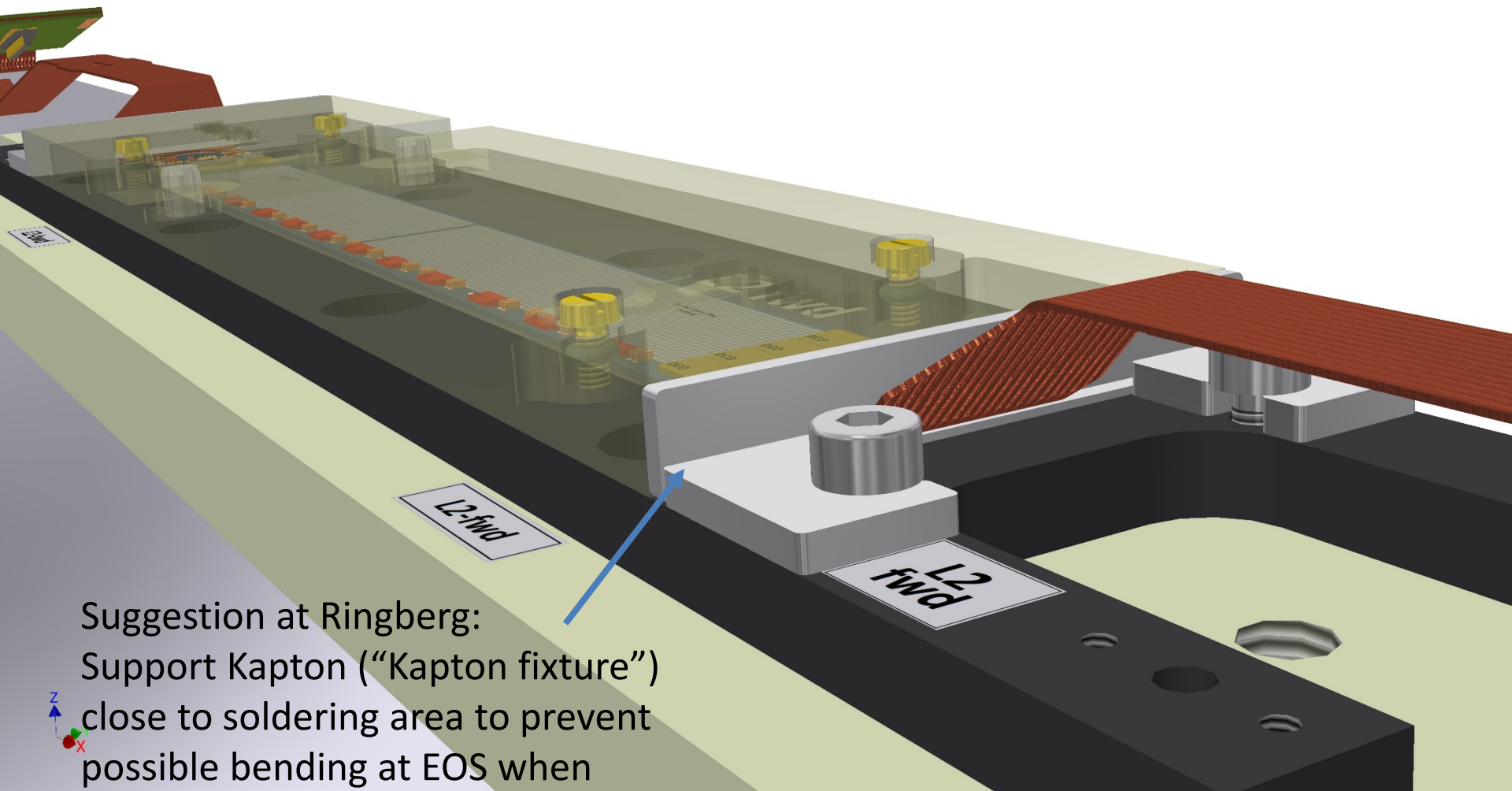
When SCB support is fixed to the beampipe, then remove the bridge

Ladder Mounting Sequence L2

Repeat mounting for layer 2 ladder

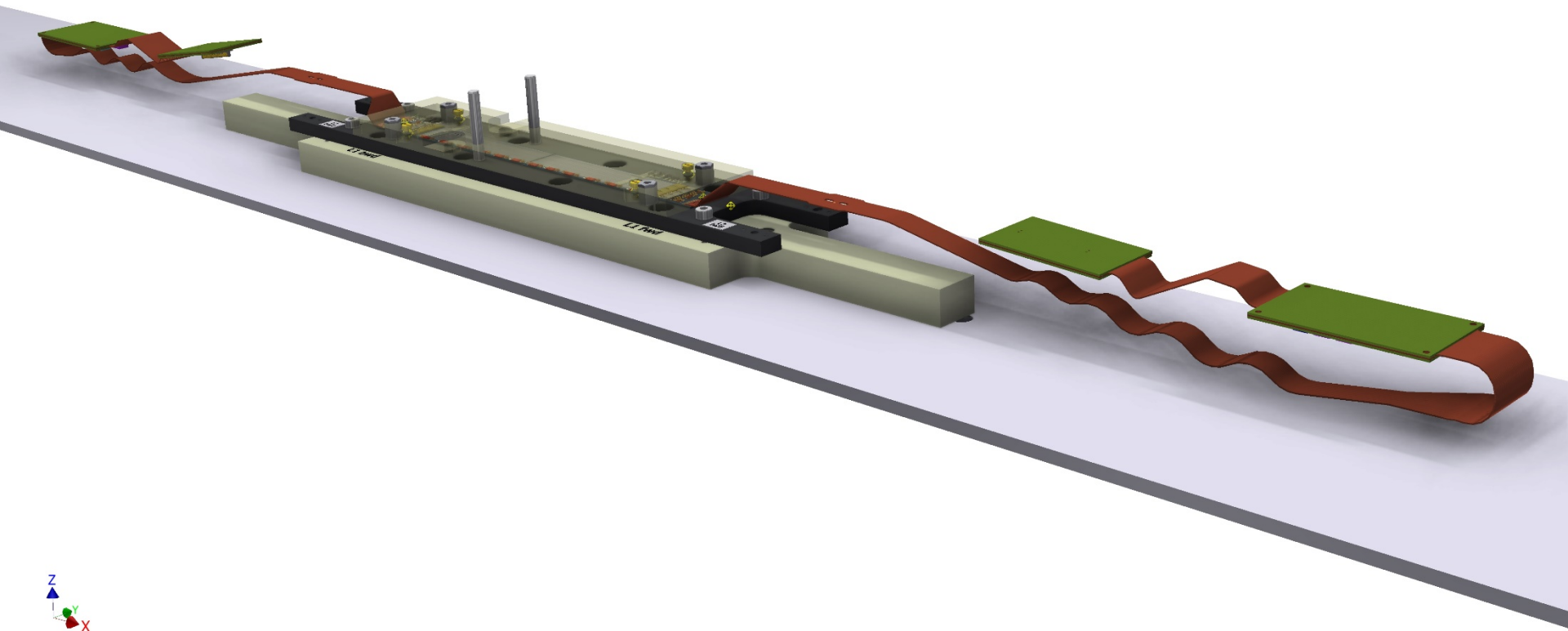


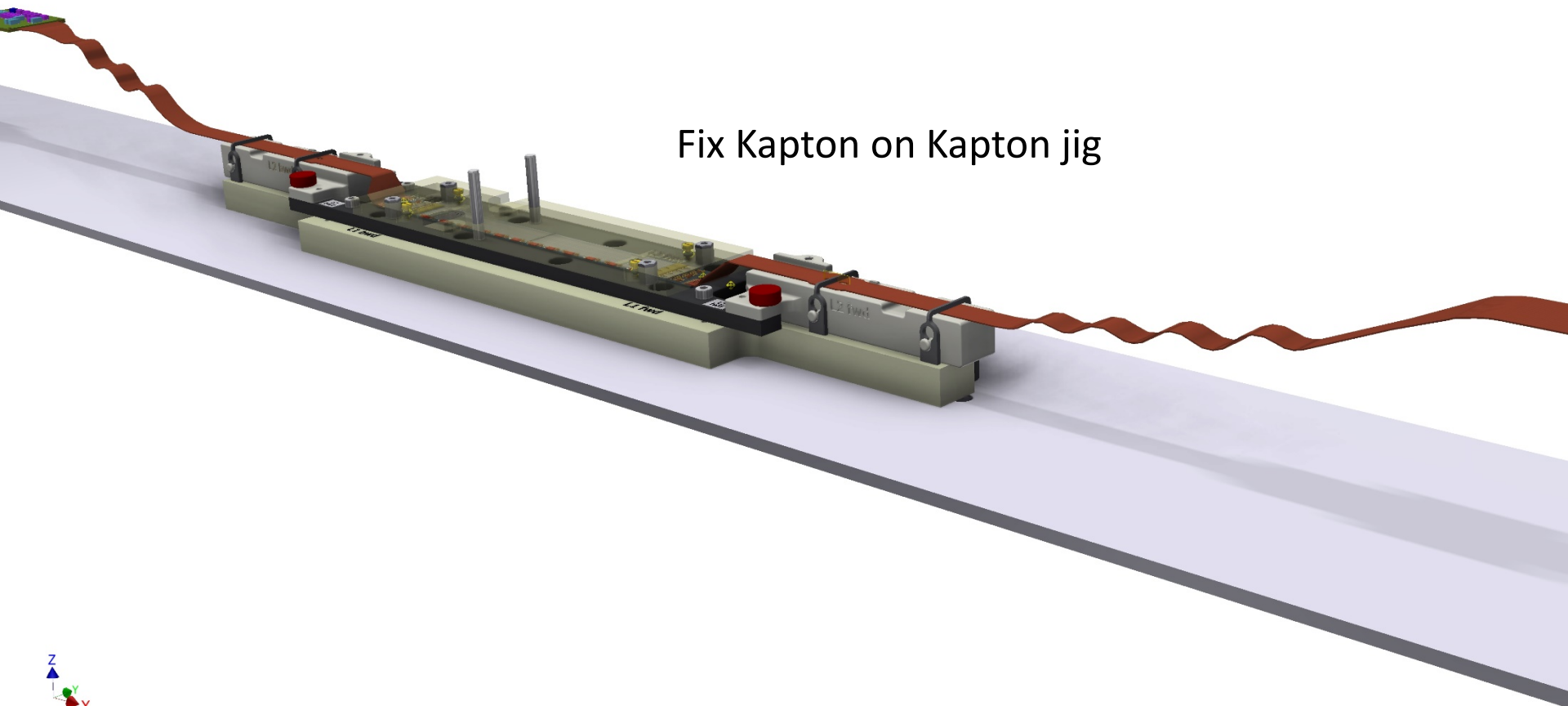
Ladder Mounting Sequence L2



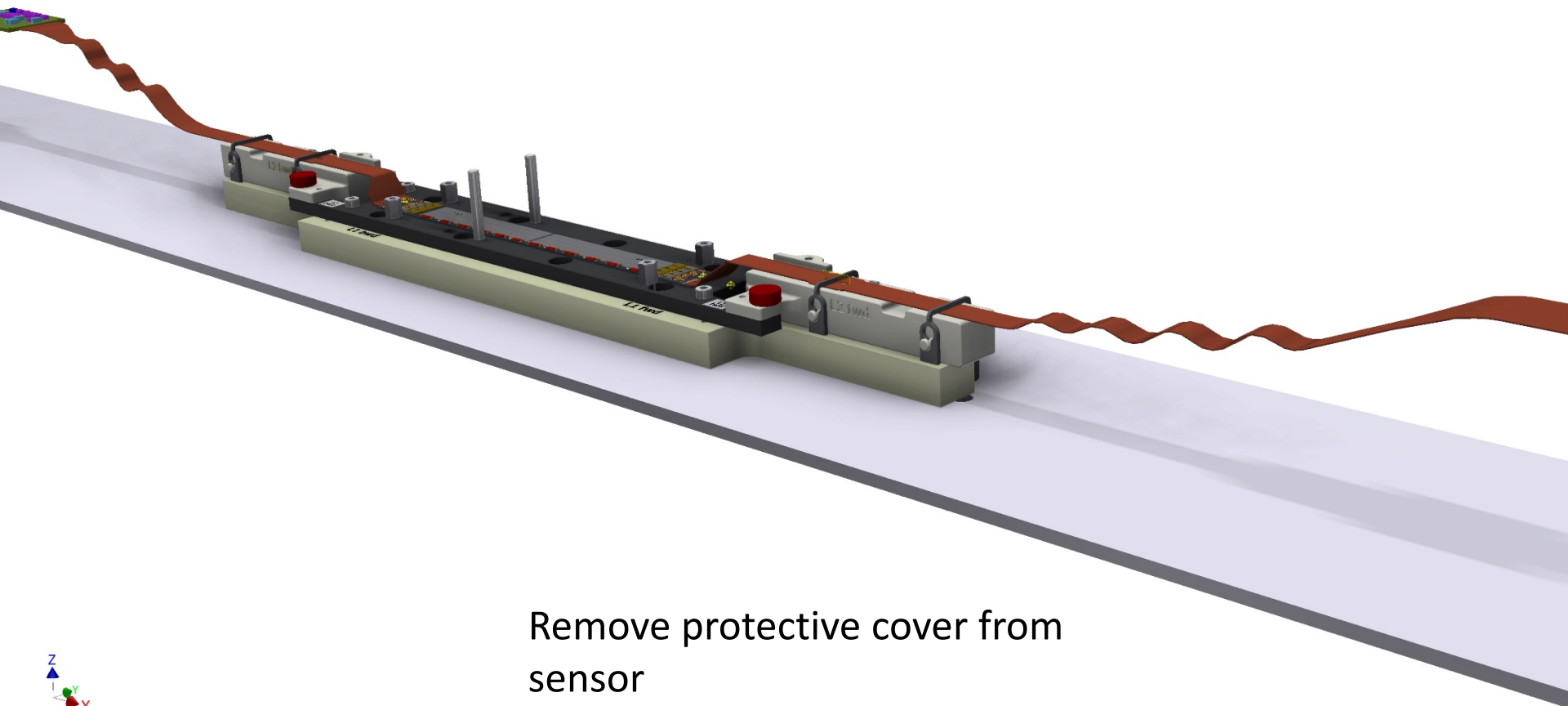
Suggestion at Ringberg:
Support Kapton (“Kapton fixture”)
close to soldering area to prevent
possible bending at EOS when
removing Kapton jig

Phase 2 Ladder Mounting Sequence L2



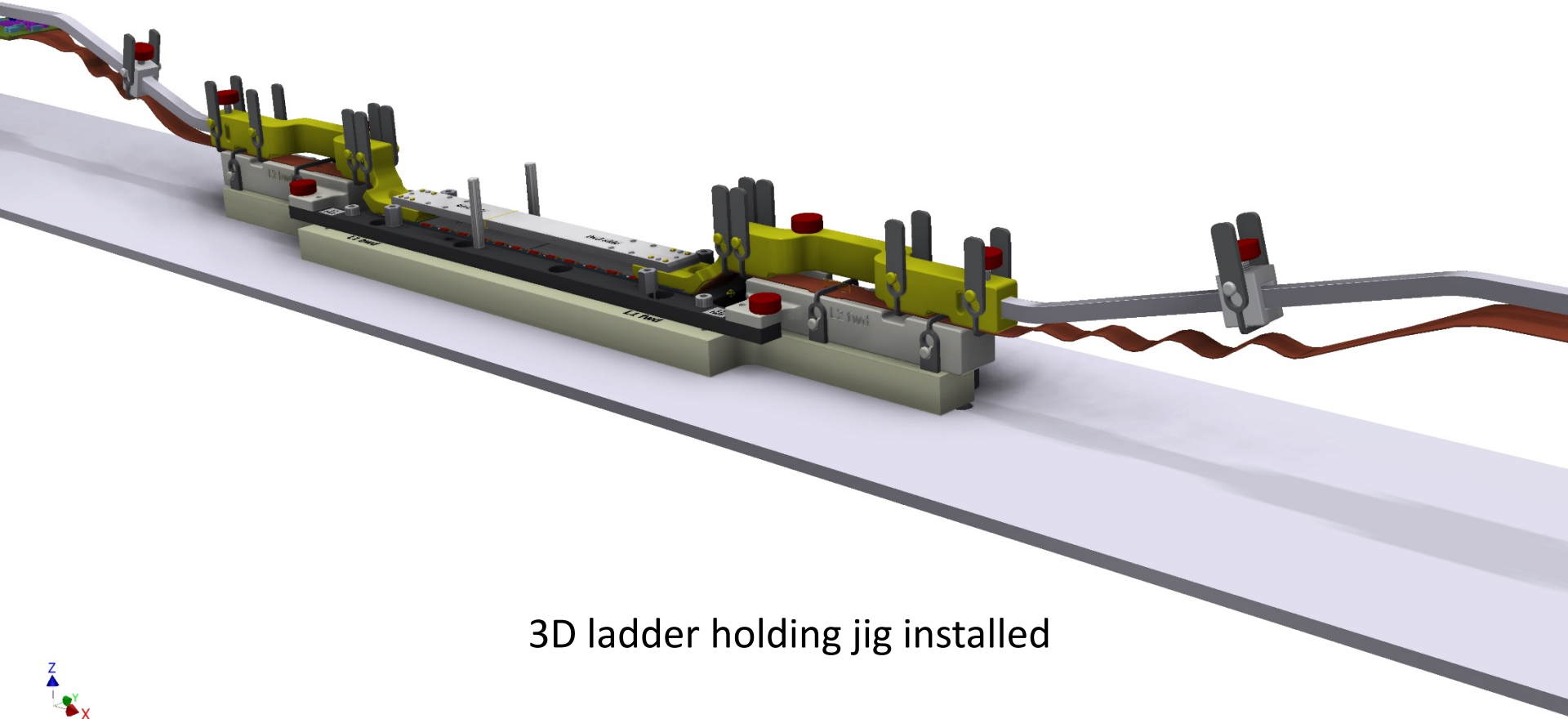


Phase 2 Ladder Mounting Sequence L2



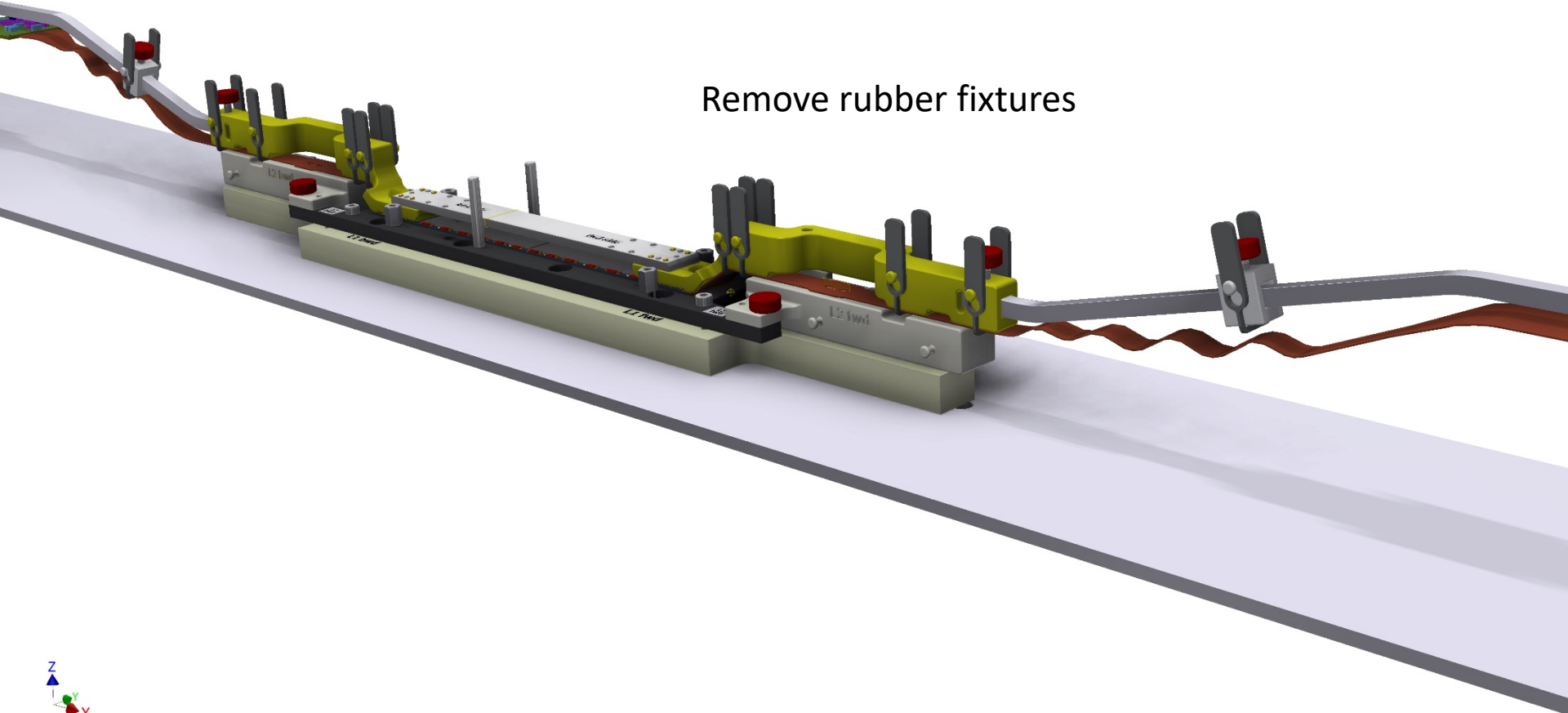
Remove protective cover from
sensor



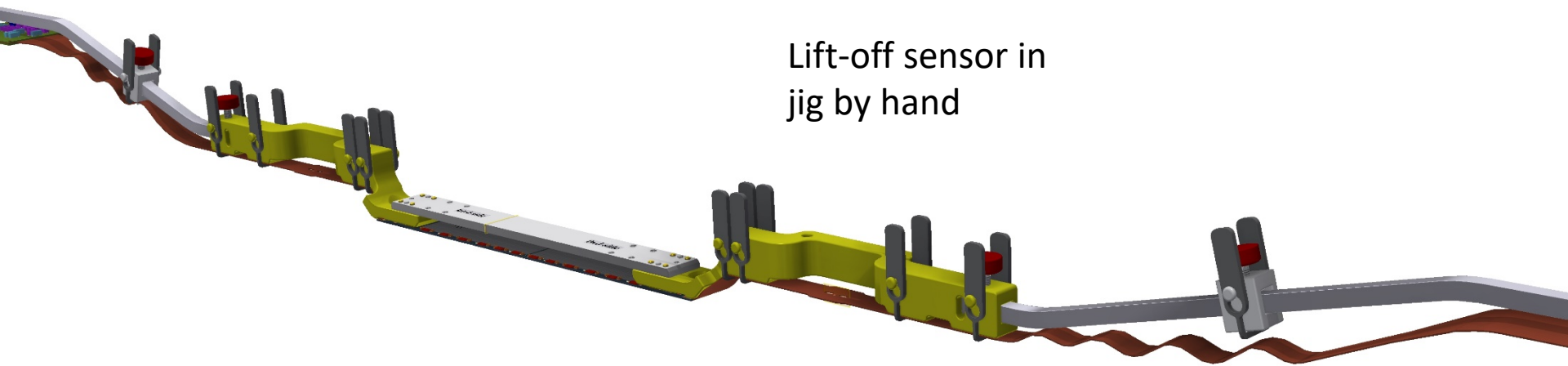


3D ladder holding jig installed

Phase 2 Ladder Mounting Sequence L2



Phase 2 Ladder Mounting Sequence L2

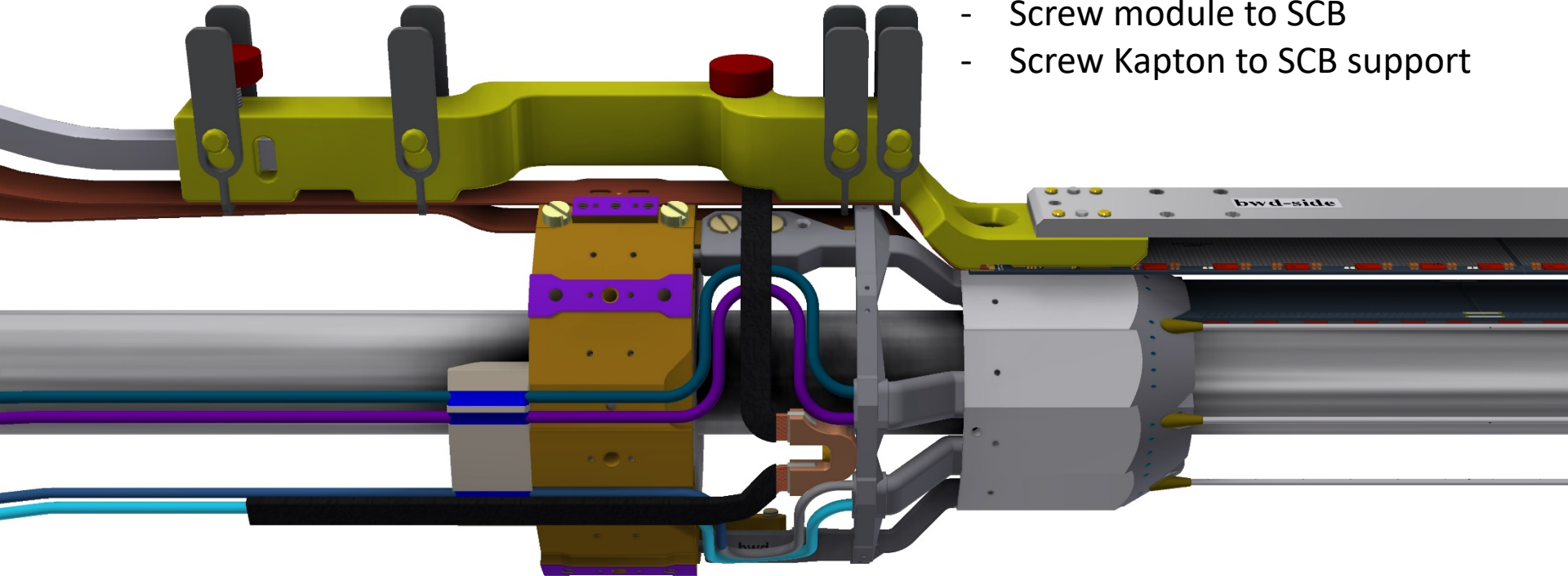


Lift-off sensor in
jig by hand

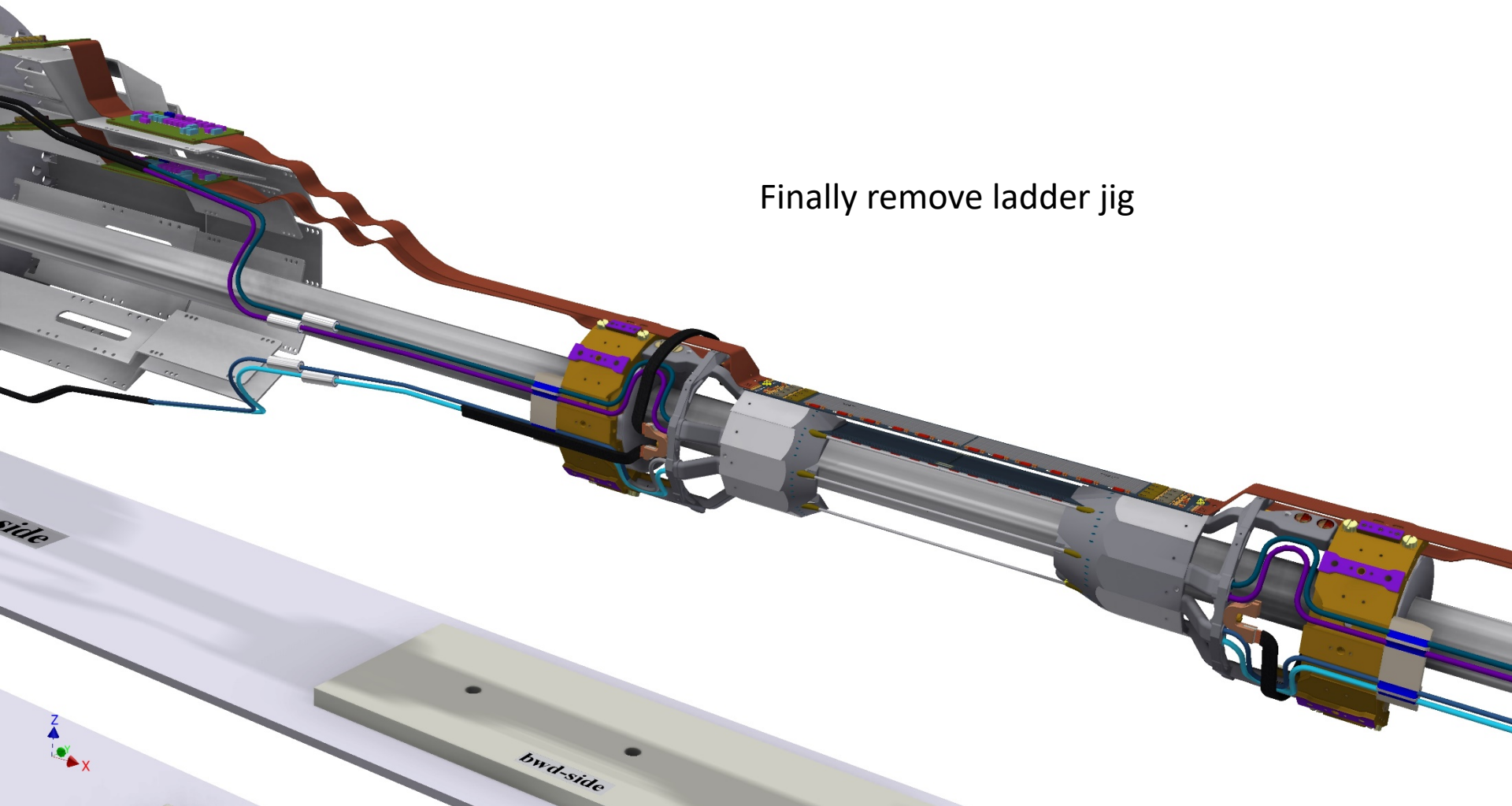


Phase 2 Ladder Mounting Sequence L2

- Set module on SCB (by hand)
- Fix ladder jig to beampipe
- Screw module to SCB
- Screw Kapton to SCB support

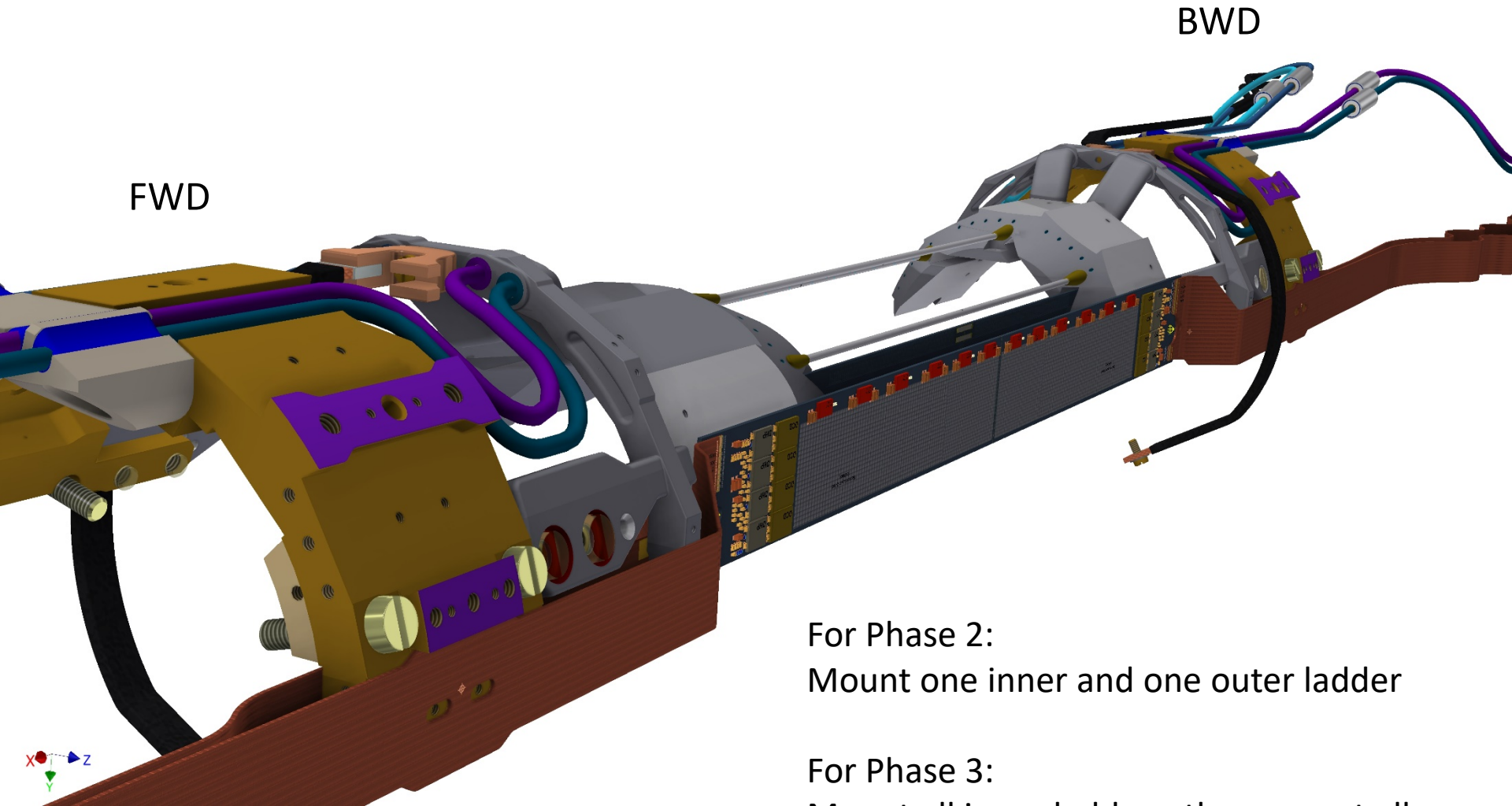


Ladder Mounting Sequence L2



Finally remove ladder jig

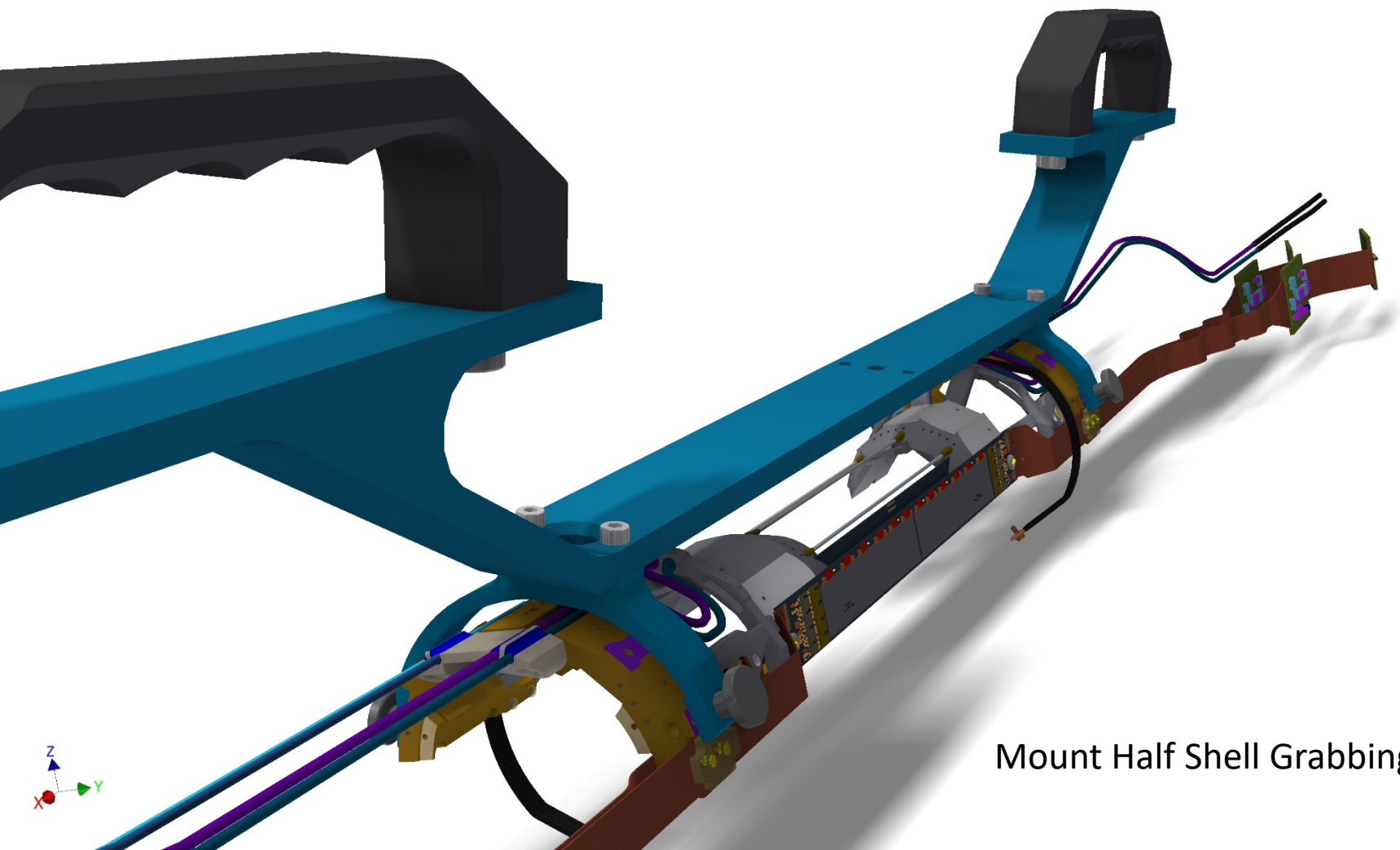
Ladder Mounting Complete



For Phase 2:
Mount one inner and one outer ladder

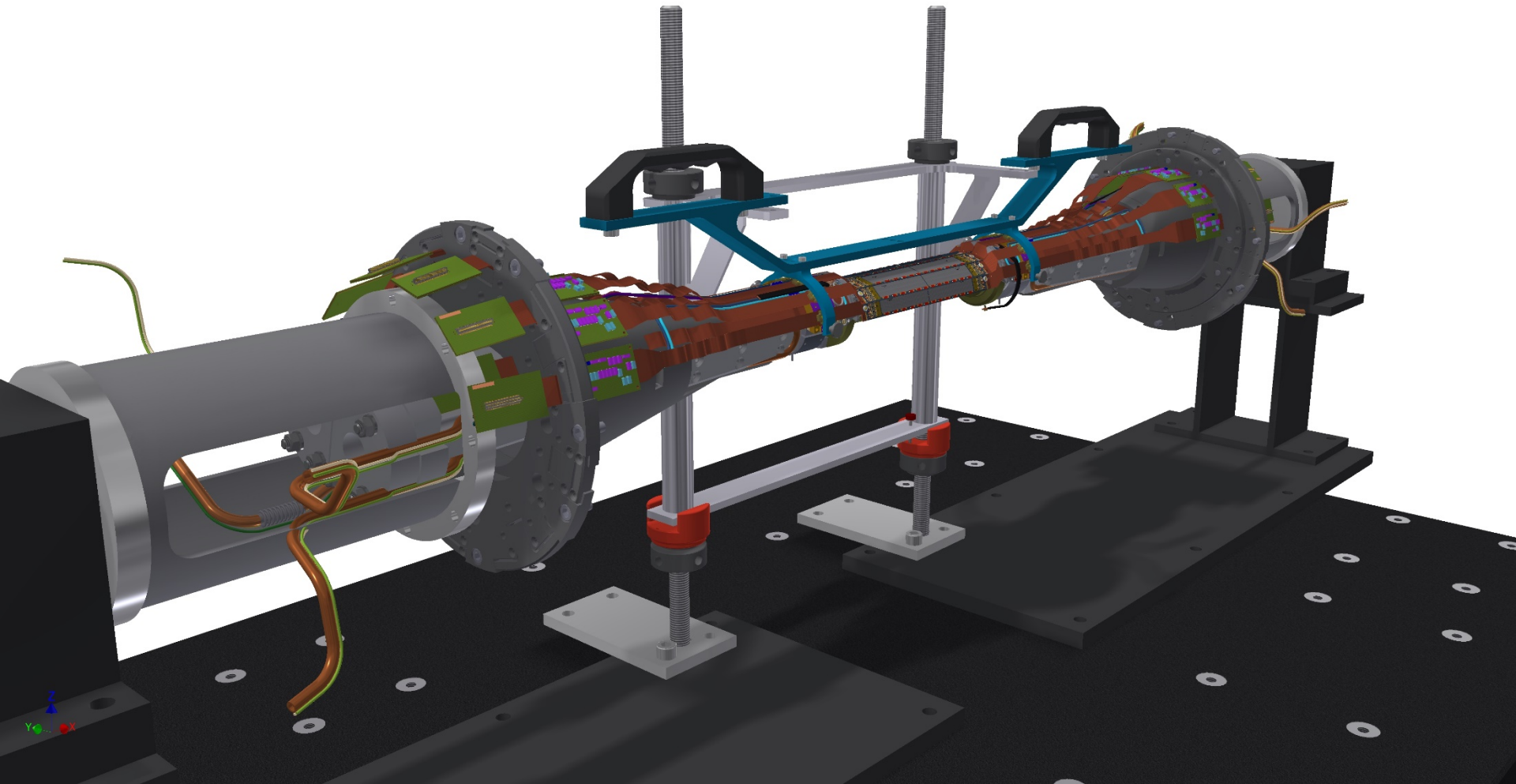
For Phase 3:
Mount all inner ladders, then mount all
outer ladders

Ladder Mounting Complete



Mount Half Shell Grabbing Tool

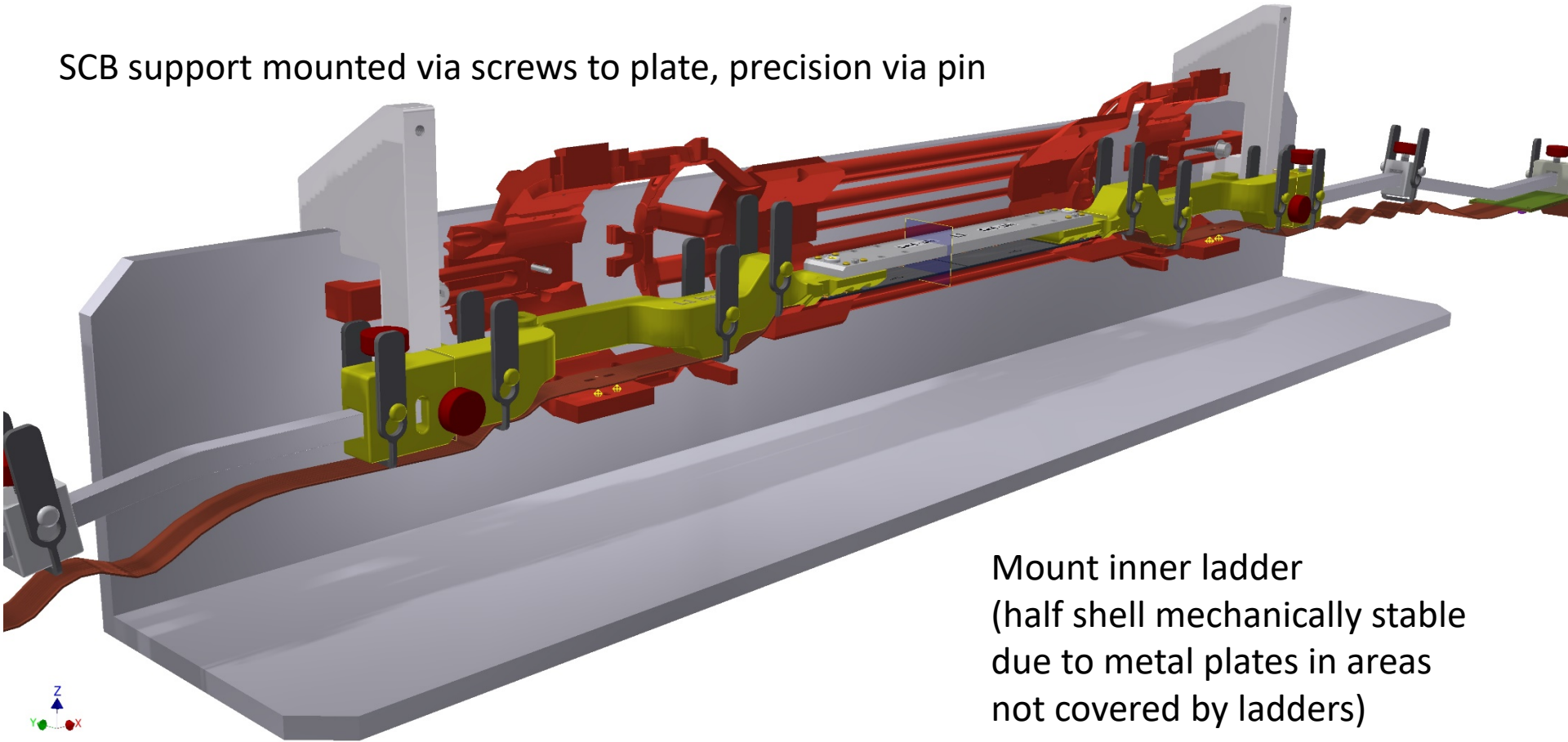
Mounting of Half Shell onto Beampipe



Simplification for Phase 2

Half shell is mounted on a metal holder
(here: half shell is plastic (3D printed) to exercise mounting procedure)

SCB support mounted via screws to plate, precision via pin

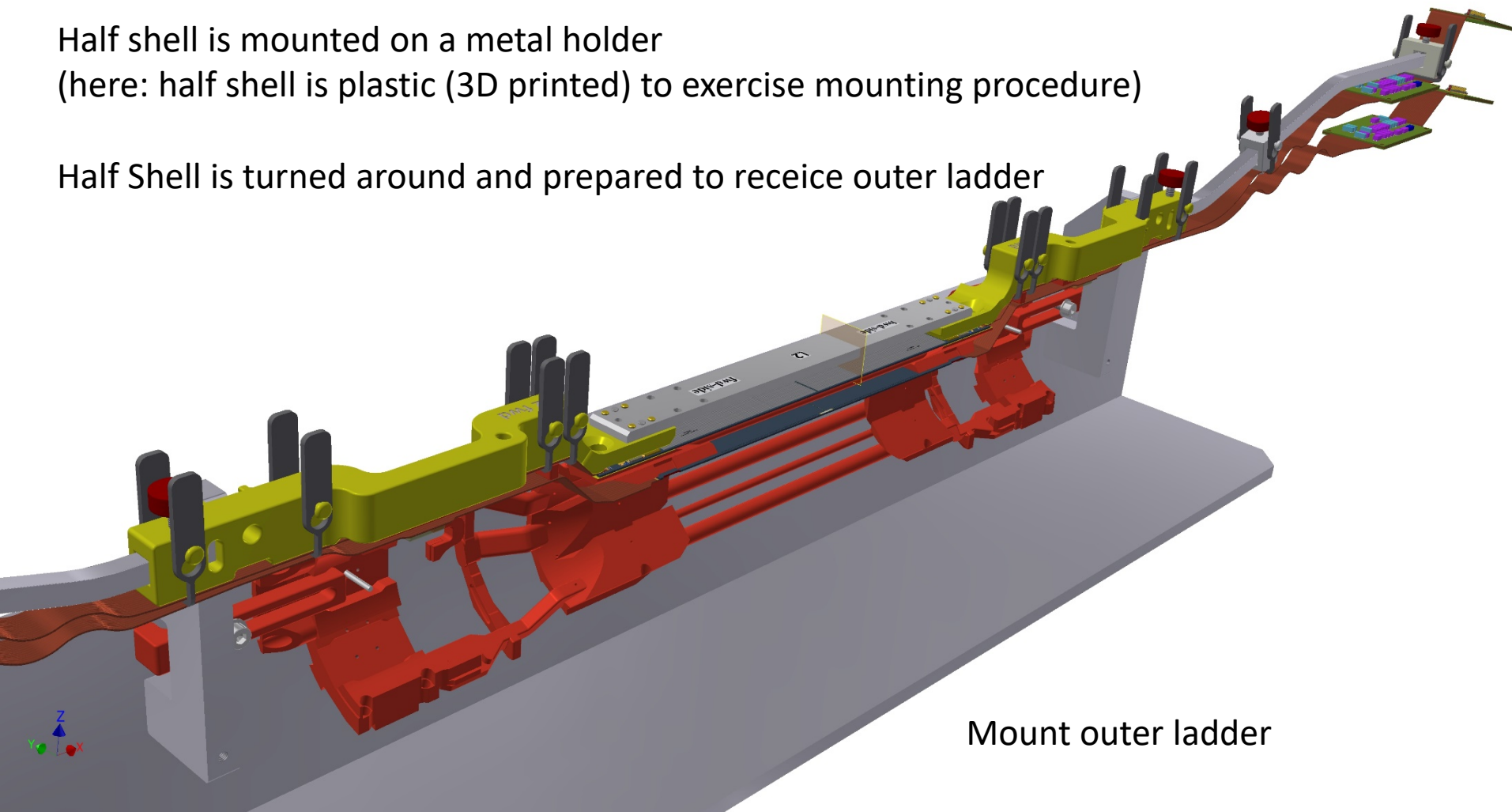


Mount inner ladder
(half shell mechanically stable
due to metal plates in areas
not covered by ladders)

Simplification for Phase 2

Half shell is mounted on a metal holder
(here: half shell is plastic (3D printed) to exercise mounting procedure)

Half Shell is turned around and prepared to receive outer ladder



Mount outer ladder