

DUNE – Details APA Handling at the ITF

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January 24, 2019

Outline

- Process cart
- Edge lift kit
- Integrating the APA in the process cart and transport frame

Process Cart “Cone Mounting System”

Mounting System design by Daresbury

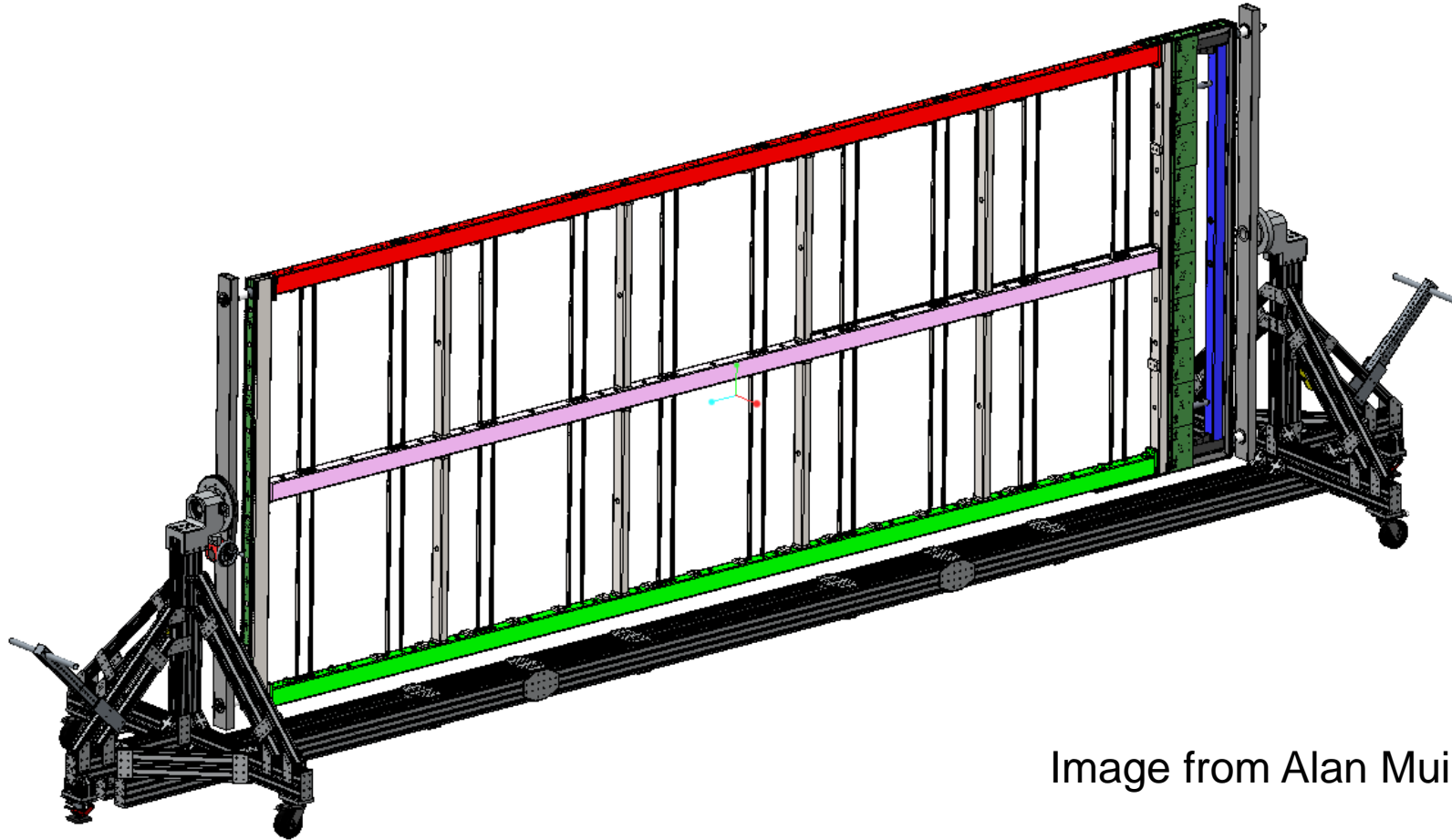
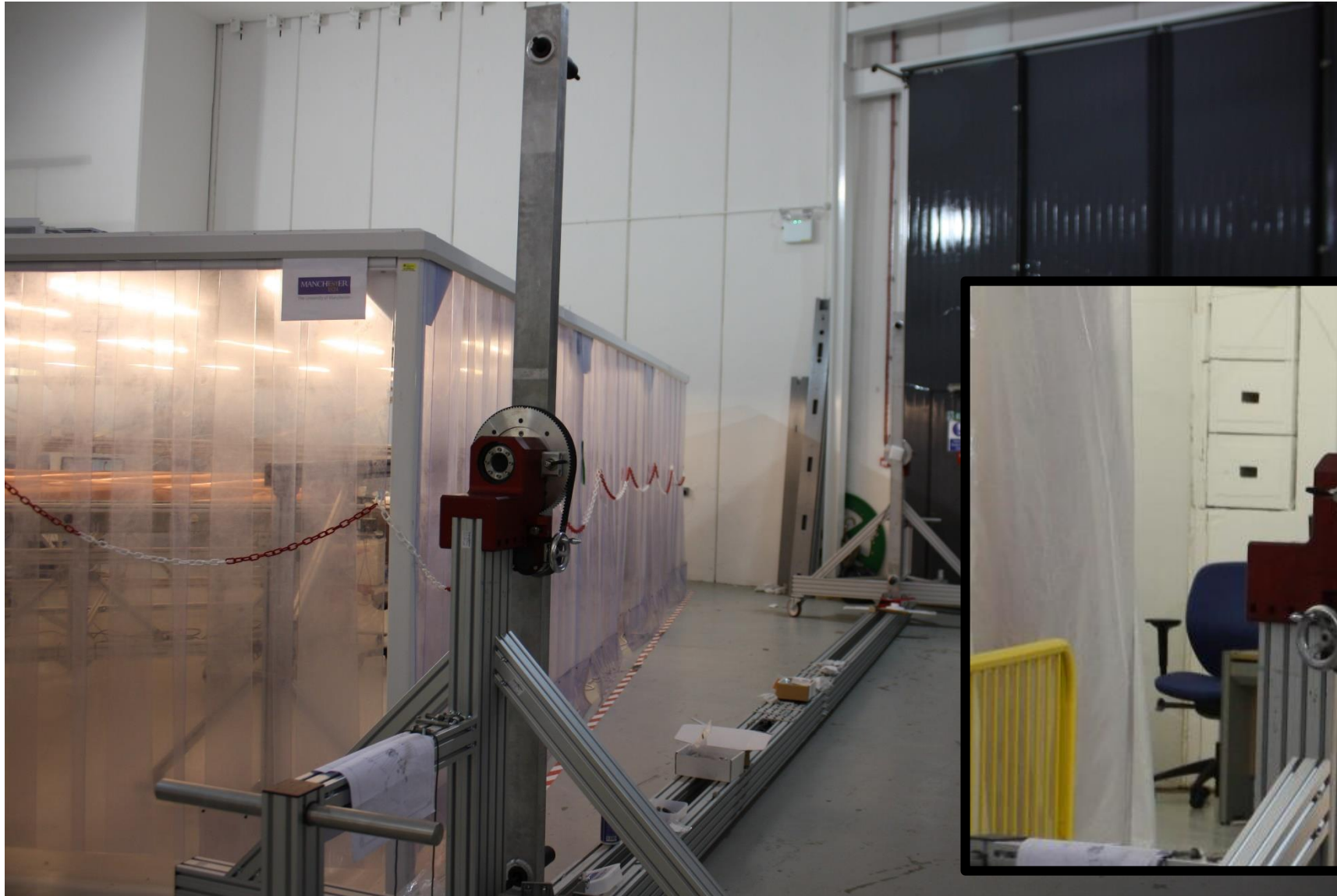
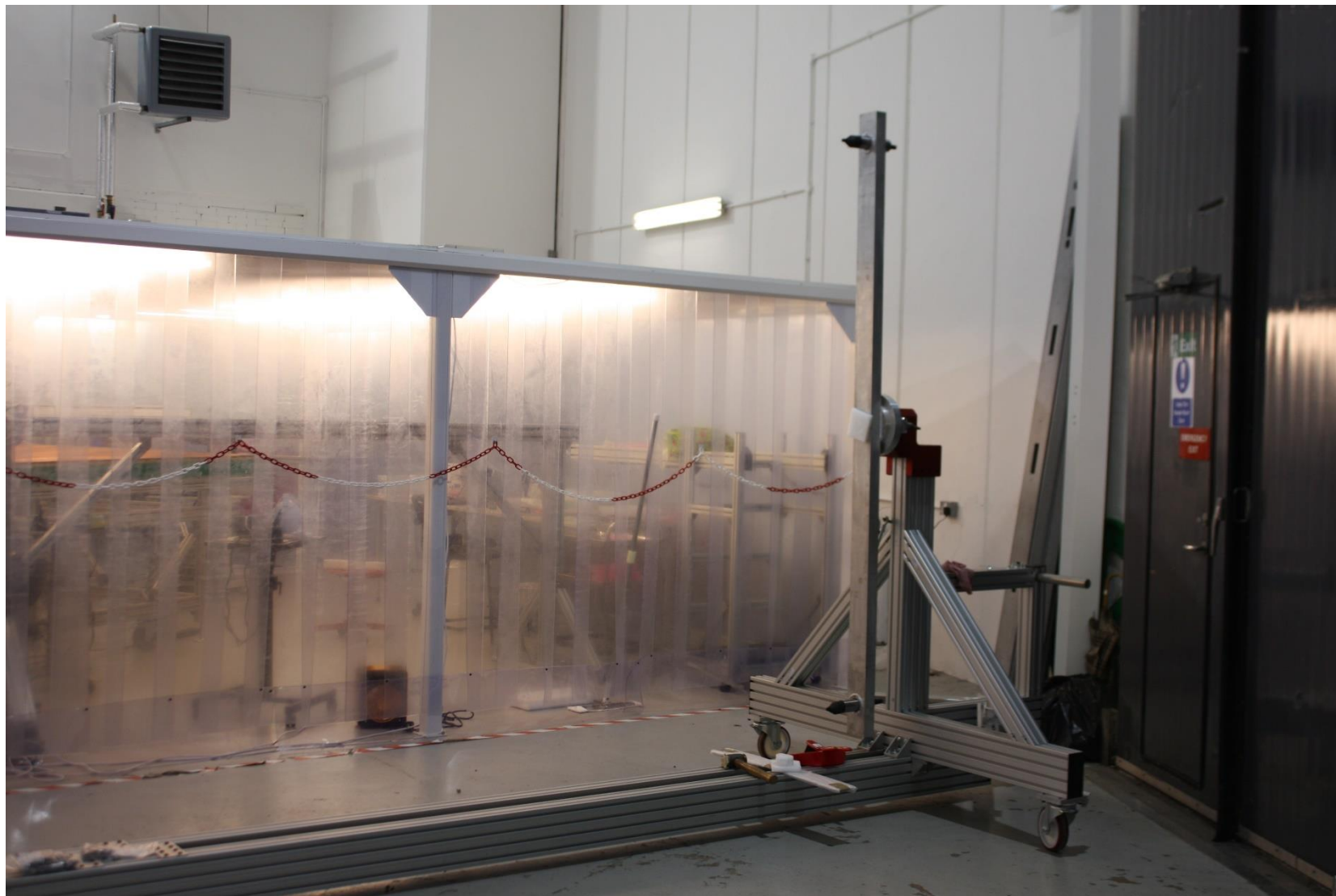


Image from Alan Muir

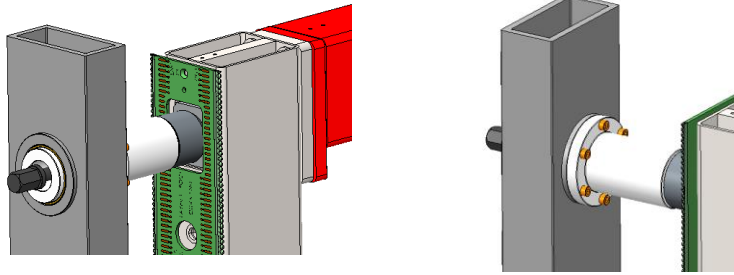
Foot end - Driven



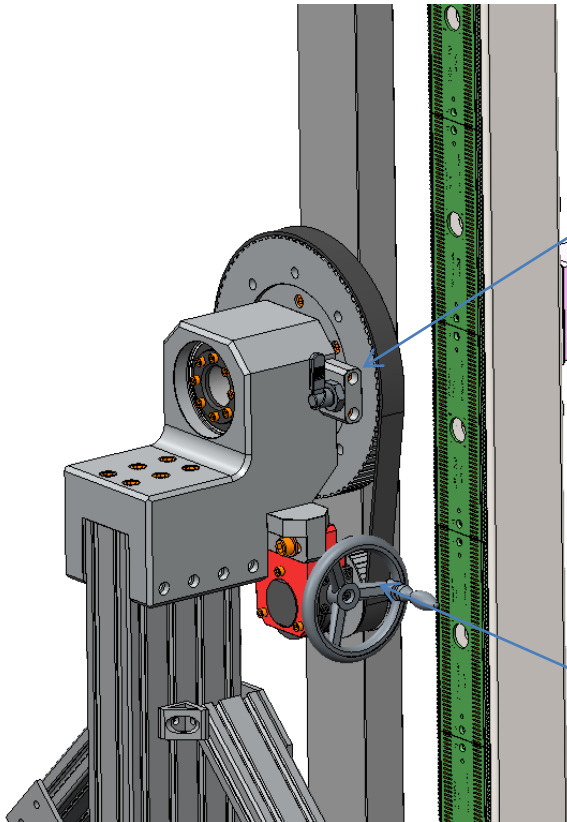
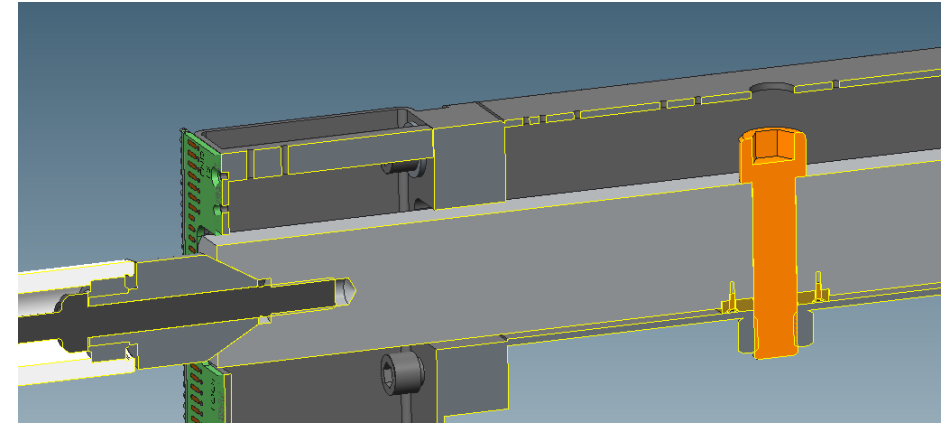
Head end – Free to rotate



Foot End

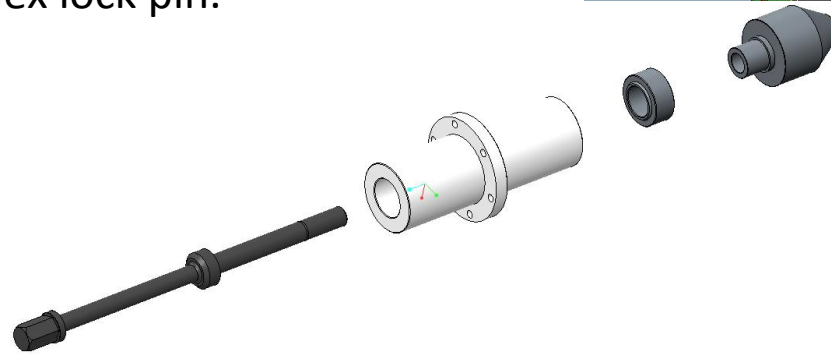


Cone mount fixed along axis.



Index lock pin.

Handwheel drive for rotation.



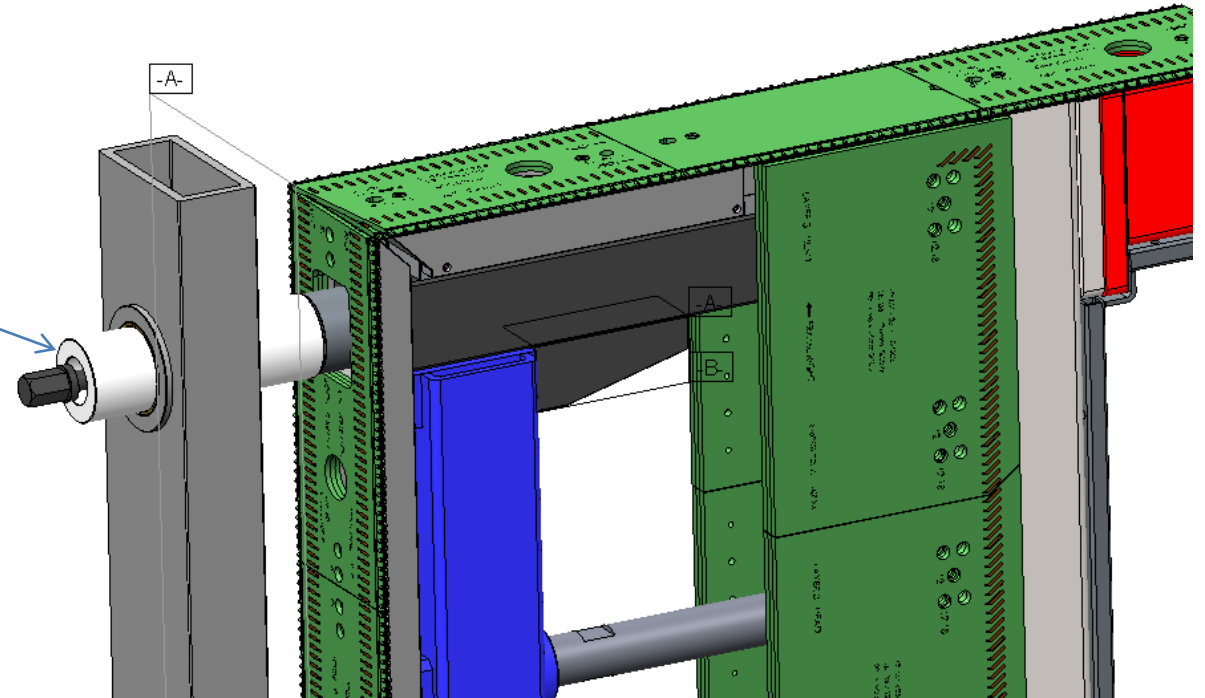
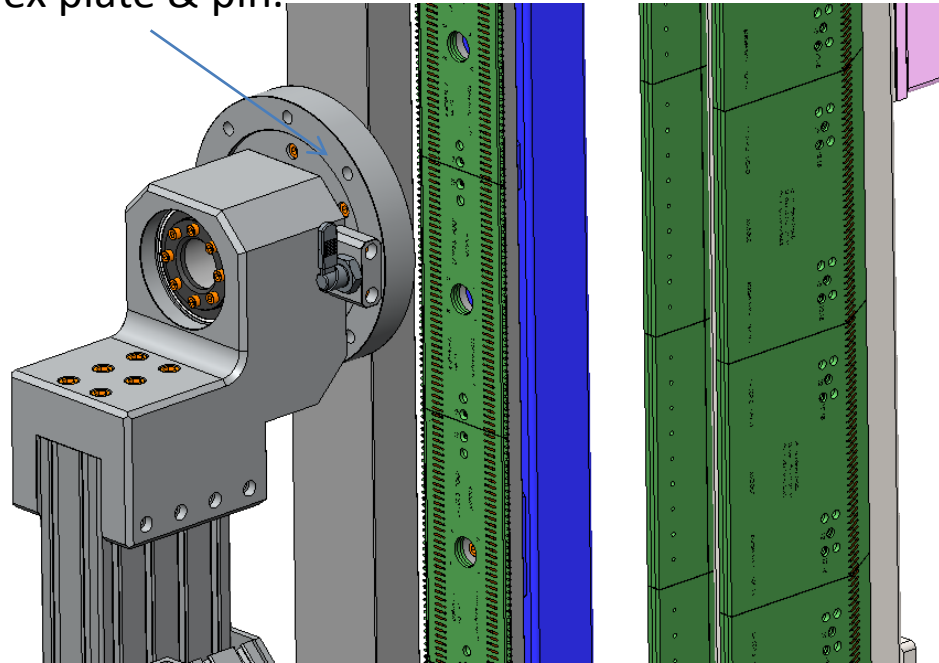
Cone mount same as winding machine.

Images from Alan Muir

Head End

Cone mount free
along axis.
Same design as
winding machine

Index plate & pin.

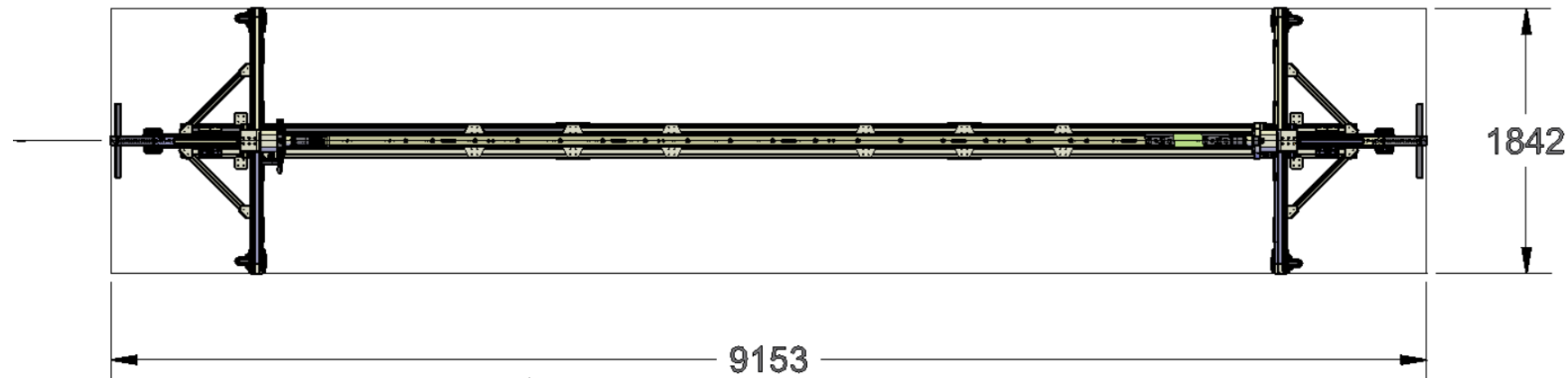
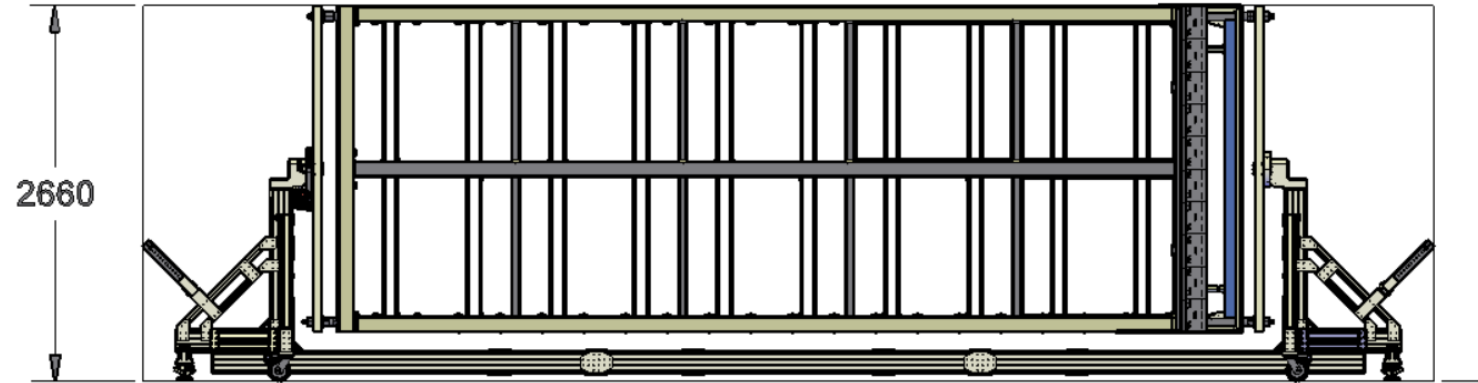


Note; Alan Muir is
investigating the option putting
the center mount in the
process cart assembly

Images from Alan Muir

Dimensions of process cart

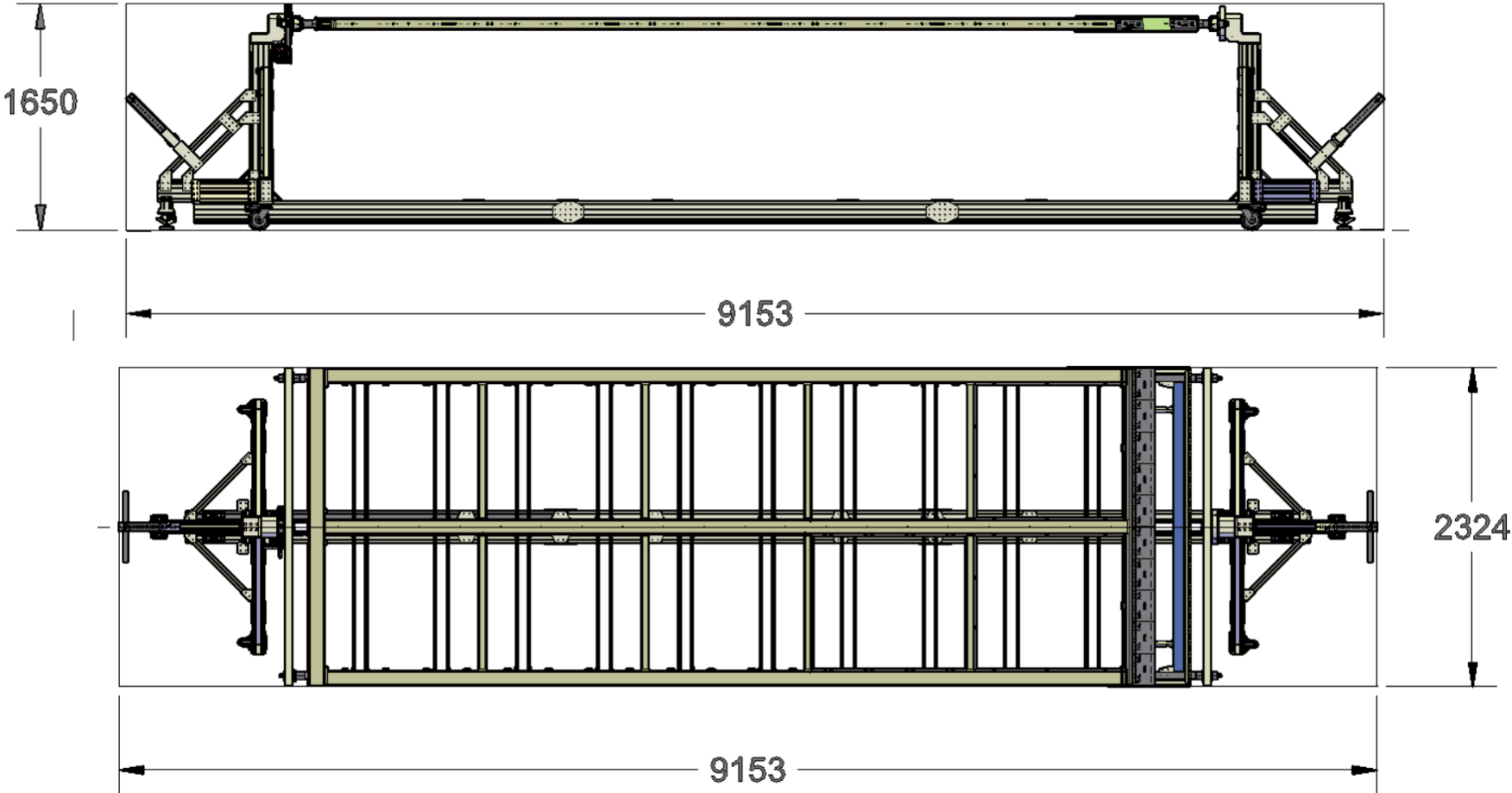
APA in “landscape orientation”



Model provided by
Daresbury Laboratory

Dimensions of process cart

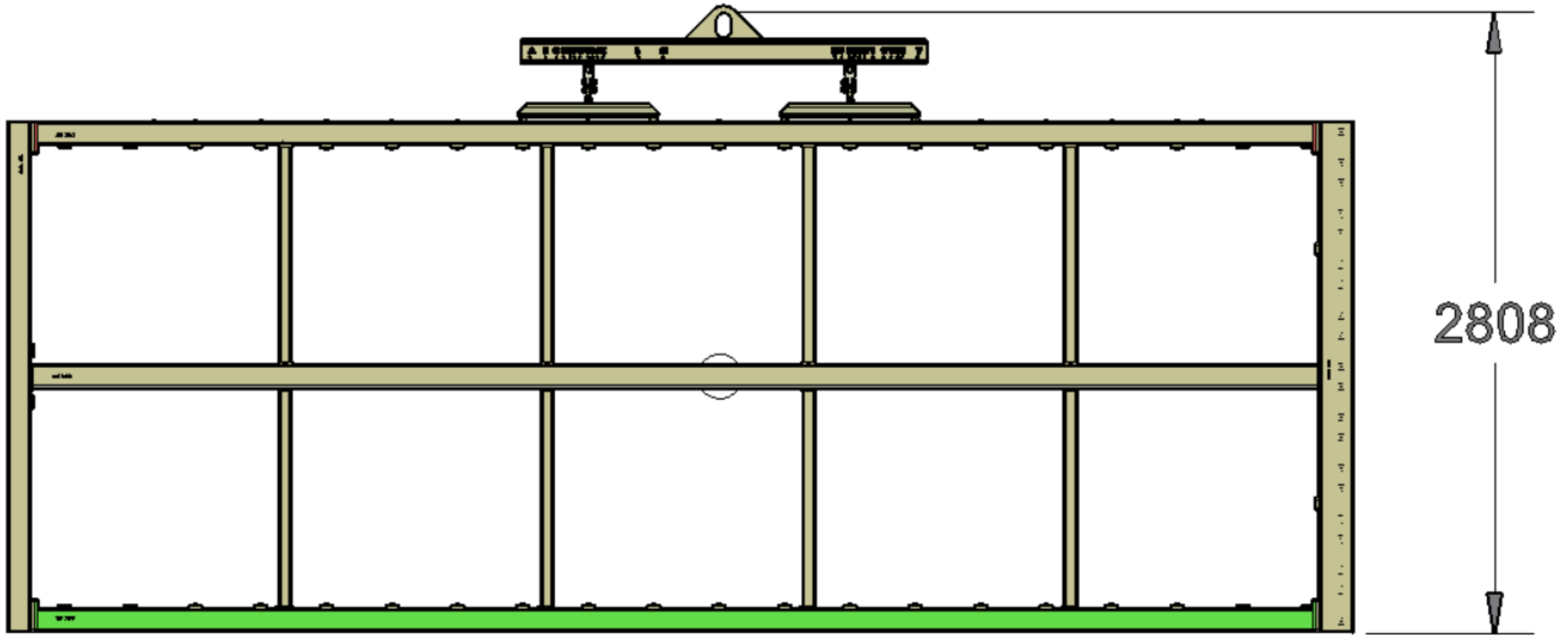
APA in horizontal orientation



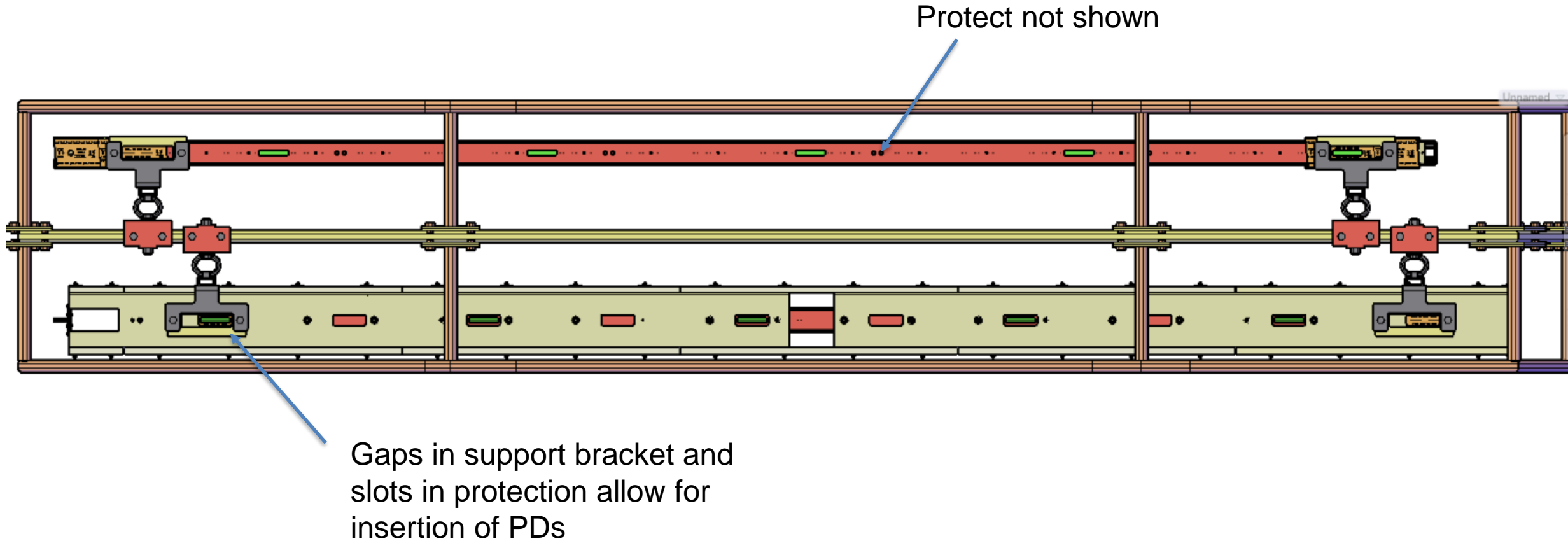
Model provided by Daresbury Laboratory

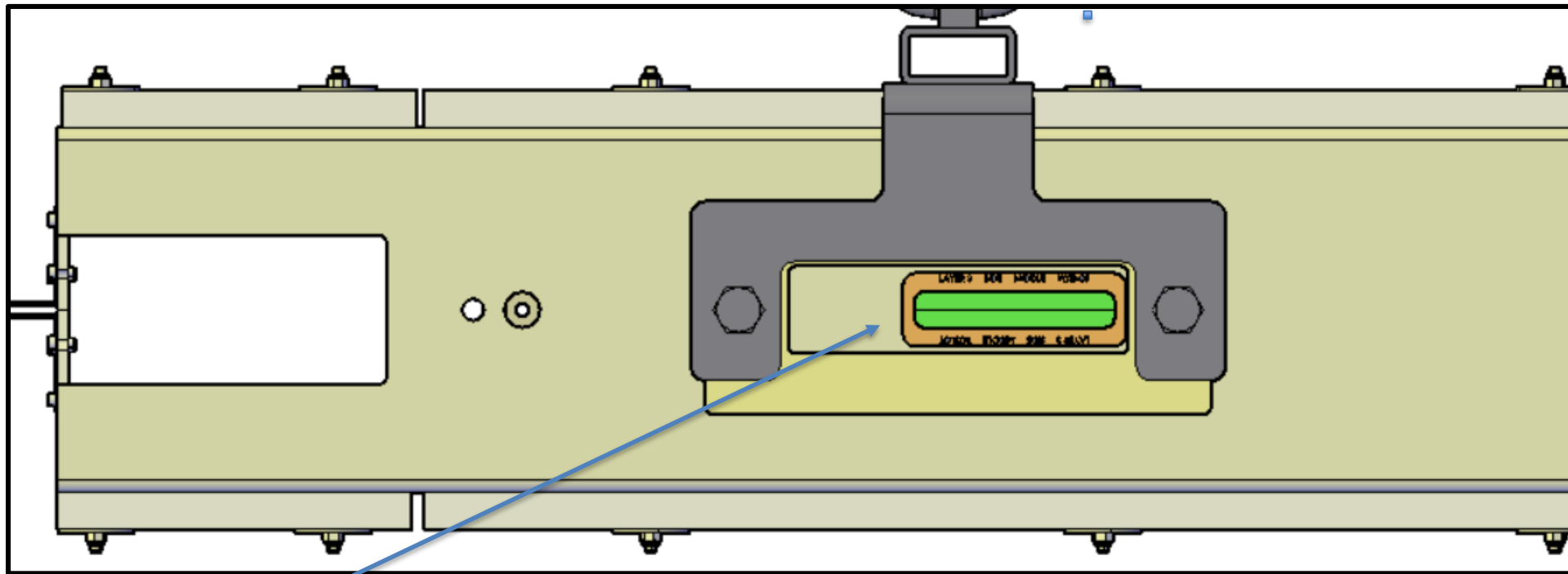
Edge lift kit

Intended use is to transfer the APA between the transport frame and process cart

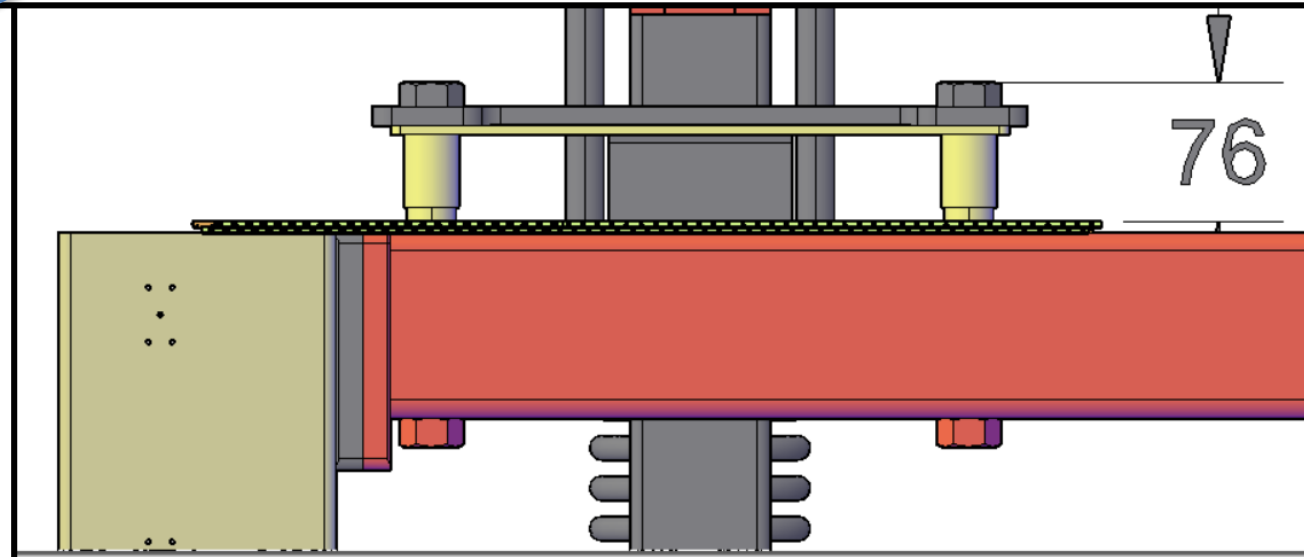


Inserting the PDs in the transport frame.





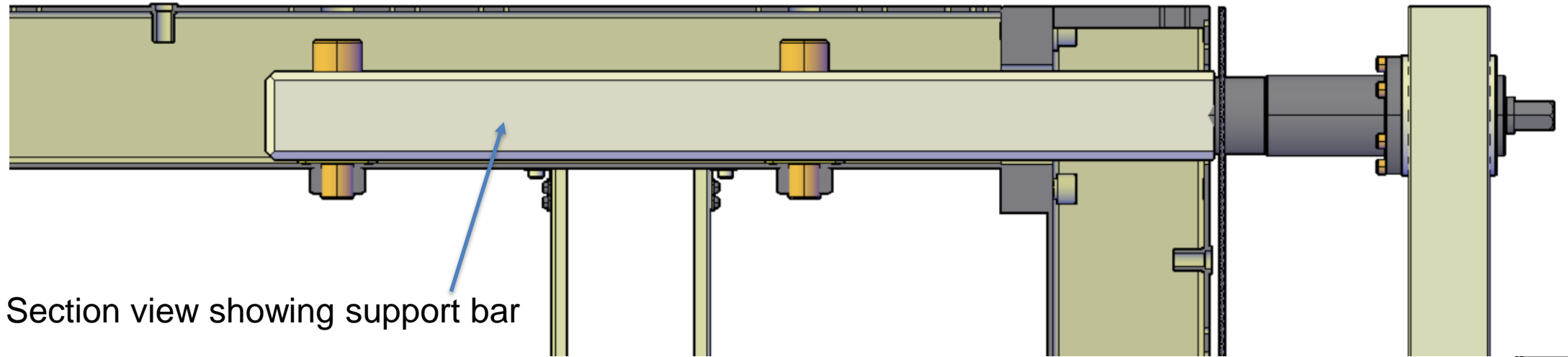
Close up of PD slot (Protection shown)



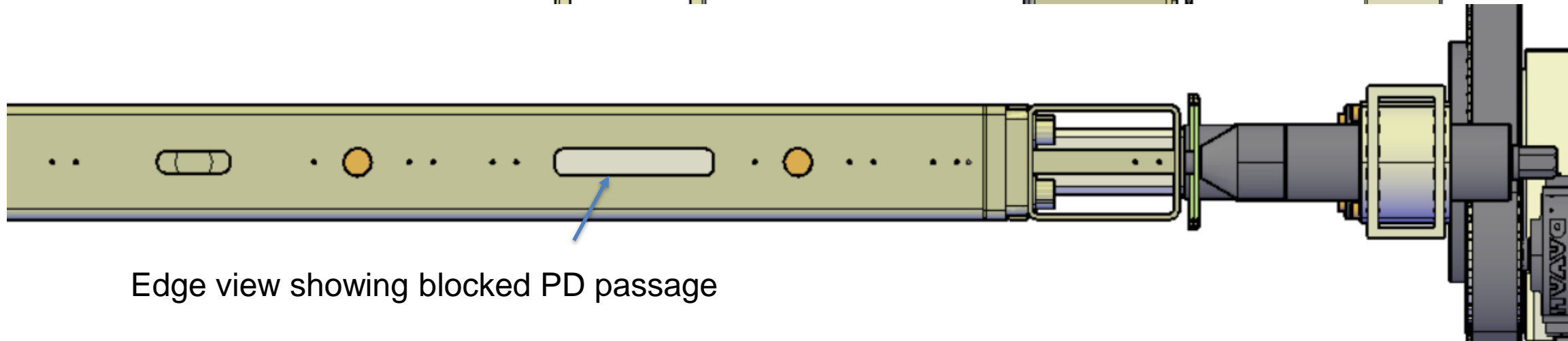
Support bracket is stood off the APA to clear the protection. (Protection not shown.)

Inserting the PDs in the process cart

Current bar is 43mm wide. Opening is 70mm wide.
Weight of bar is a consideration.



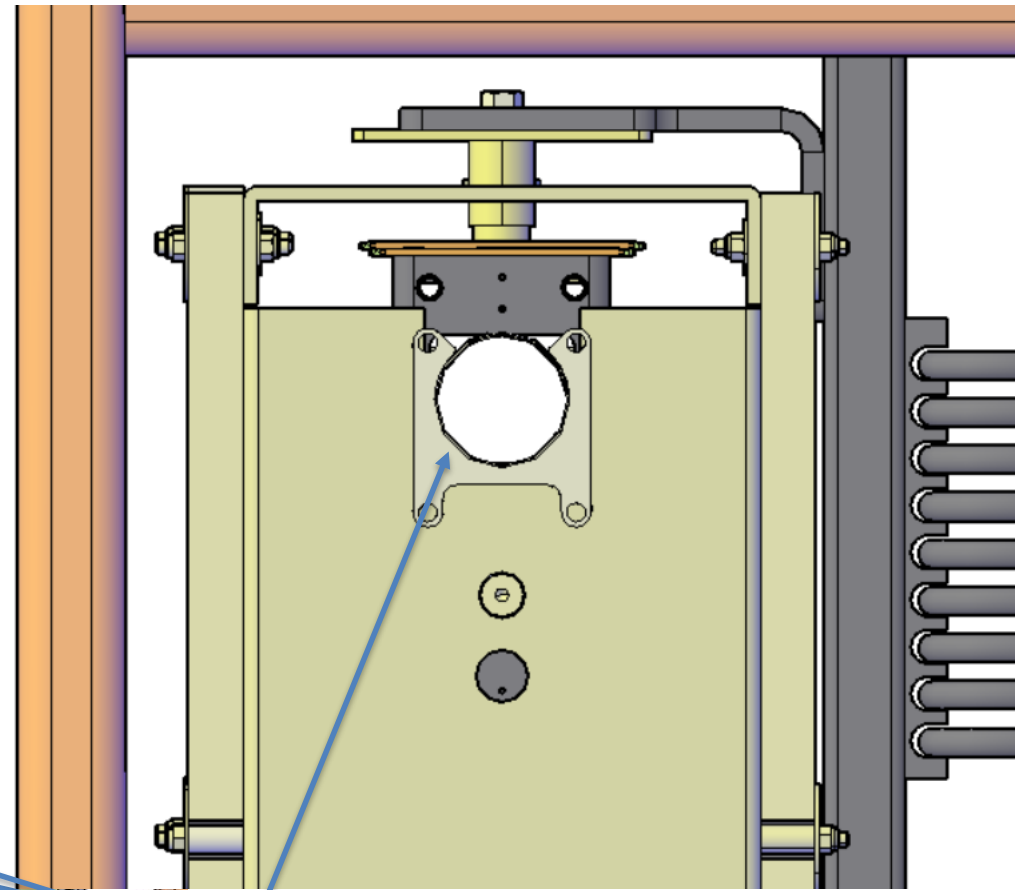
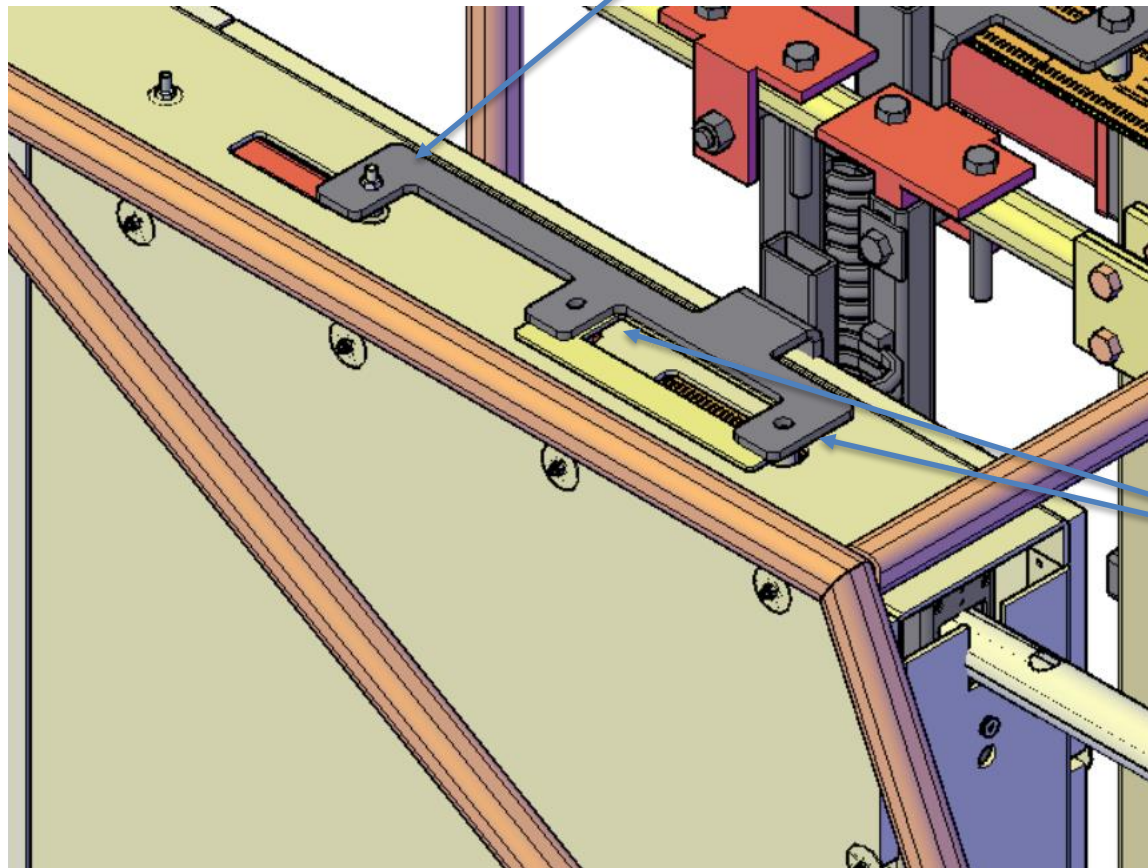
Section view showing support bar



Edge view showing blocked PD passage

Inserting the conduit tube in the transport frame

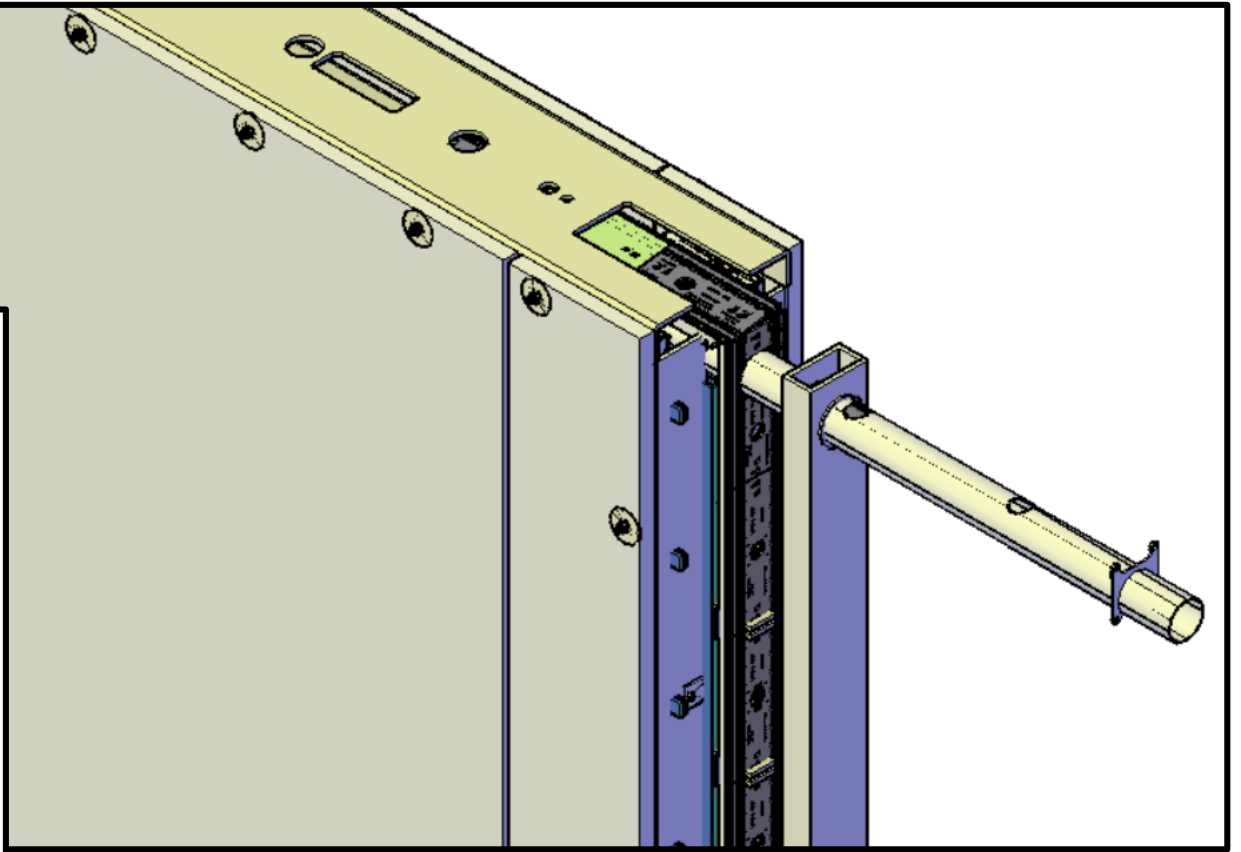
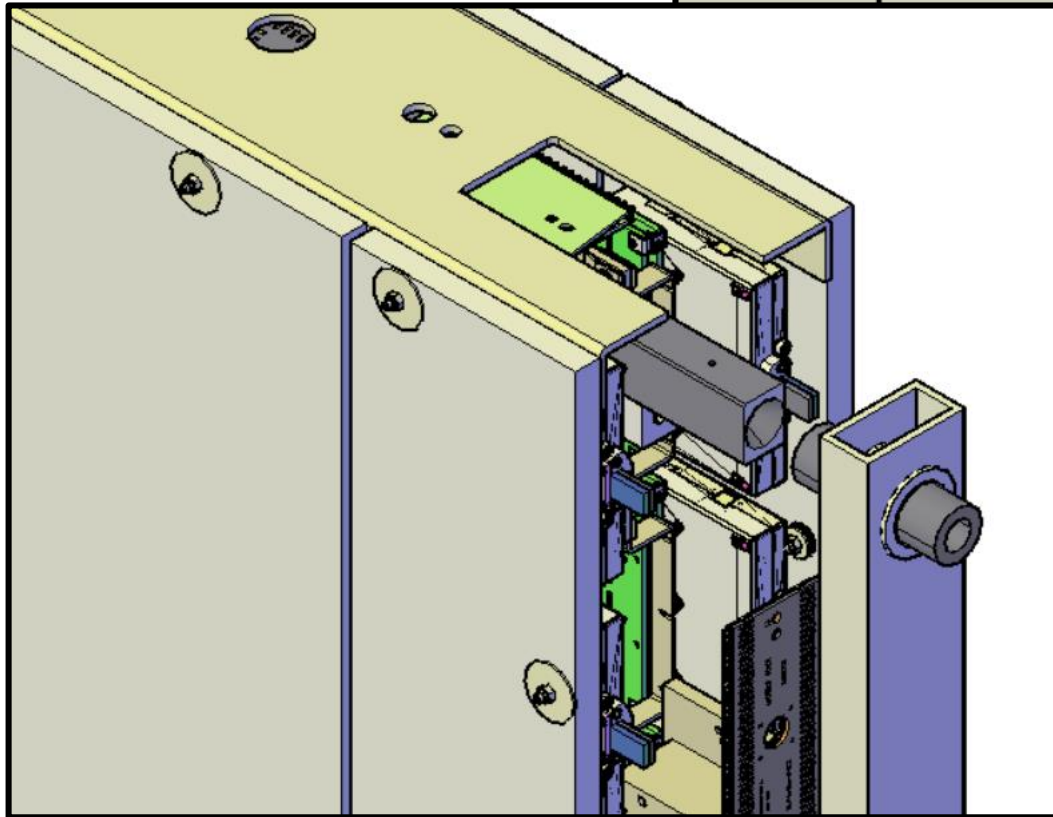
APA support bracket shown extended to pick up rivnut location. Conceptual



Large M20 bolts are removed one edge at time to clear passageway

Tapered nose needed to guide conduit

Inserting the conduit
tube in the process
cart



Passage of the conduit conflicts with process cart support hardware even with the outboard support shaft removed.

Summary:

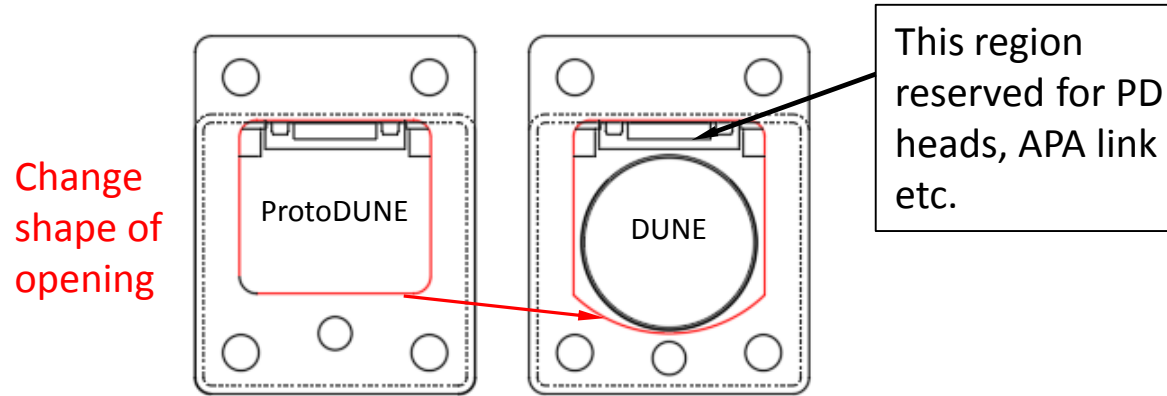
	PD install	CE install	Laser Tension testing	Cold testing	Conduit install
Process cart	Conflict with support	No obvious issue	No obvious issue	space and material	Conflict with support
Transport frame	How to maneuver frame?	No obvious issue	Only partial access	space, material, apa is partially insulated	No obvious issue
Other				Monorail landscape or vertical	

Additional decision - One design for the shipping and one for transfer underground?

Back up slides

Current plan - Add conduit inside APA side tubes

Add a 2.5" OD x 0.035" wall round SS tube for running the CE cables up through the sides of the APAs. It has cutouts to allow attachment of the M20 bolts used for lifting.



Change shape of openings at ends of side tubes

Open up side tube openings by curving outside edge, to make space for the tube.

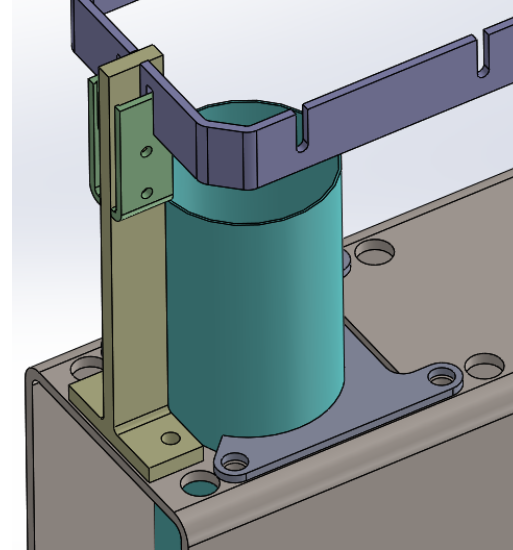
Add screw holes on upper surface of head tube.

The conduit tube attaches with a weld on plate.

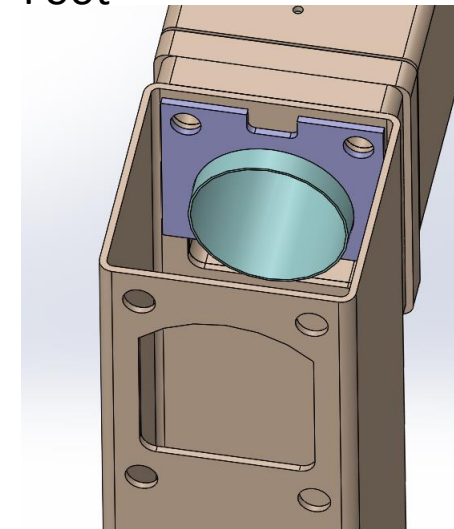
Add plates at foot end to locate tubes side to side.

They provide no axial constraint. They attach under two of the screws that hold the foot tube and side tube together.

Head



Foot



Plan to support the conduit tube inside the APA side tube.
Strain relief (to be designed) to mount on top of conduit

