

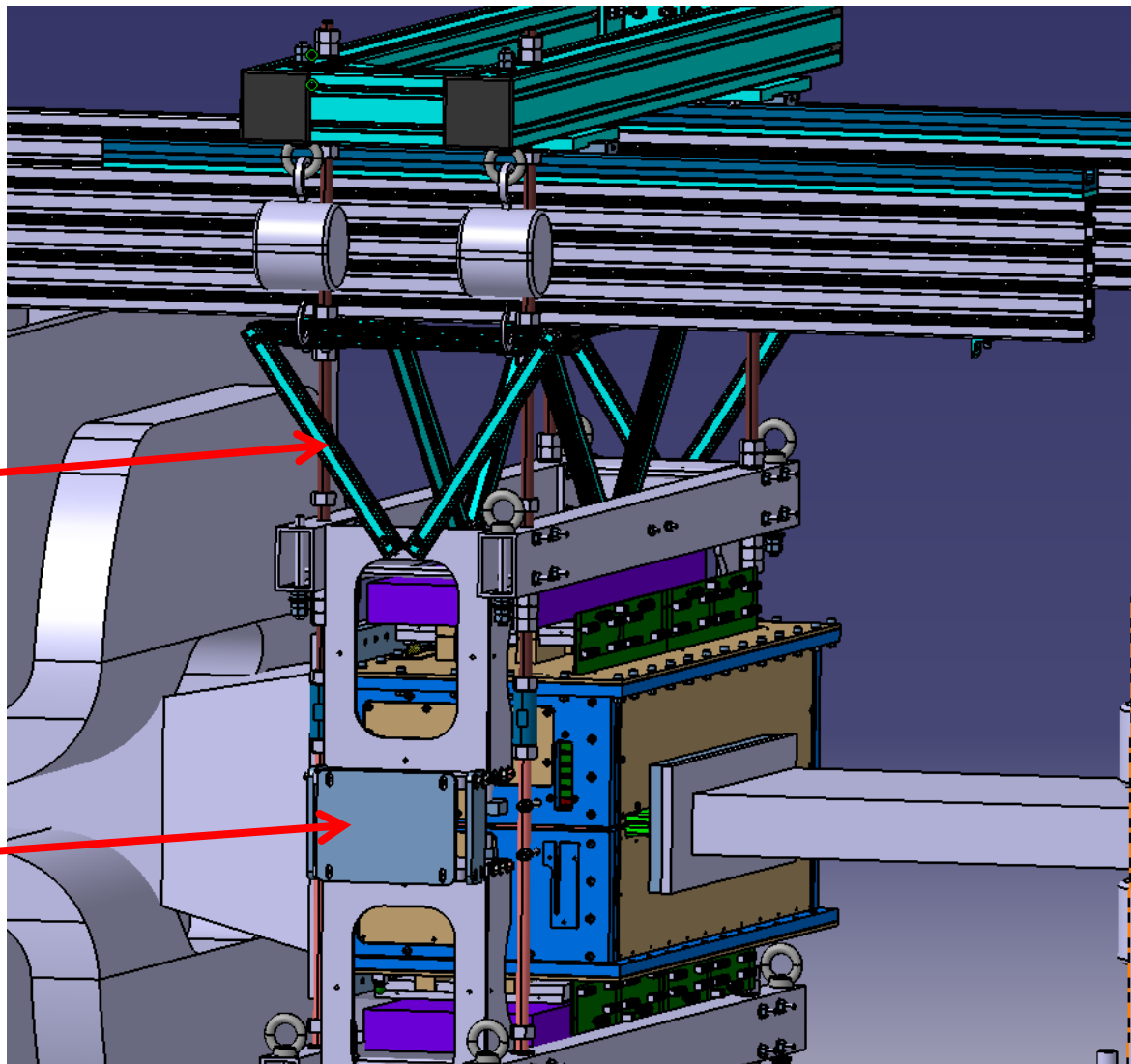
Protocole to move the HPS ECal along the rails

1) Dismounting

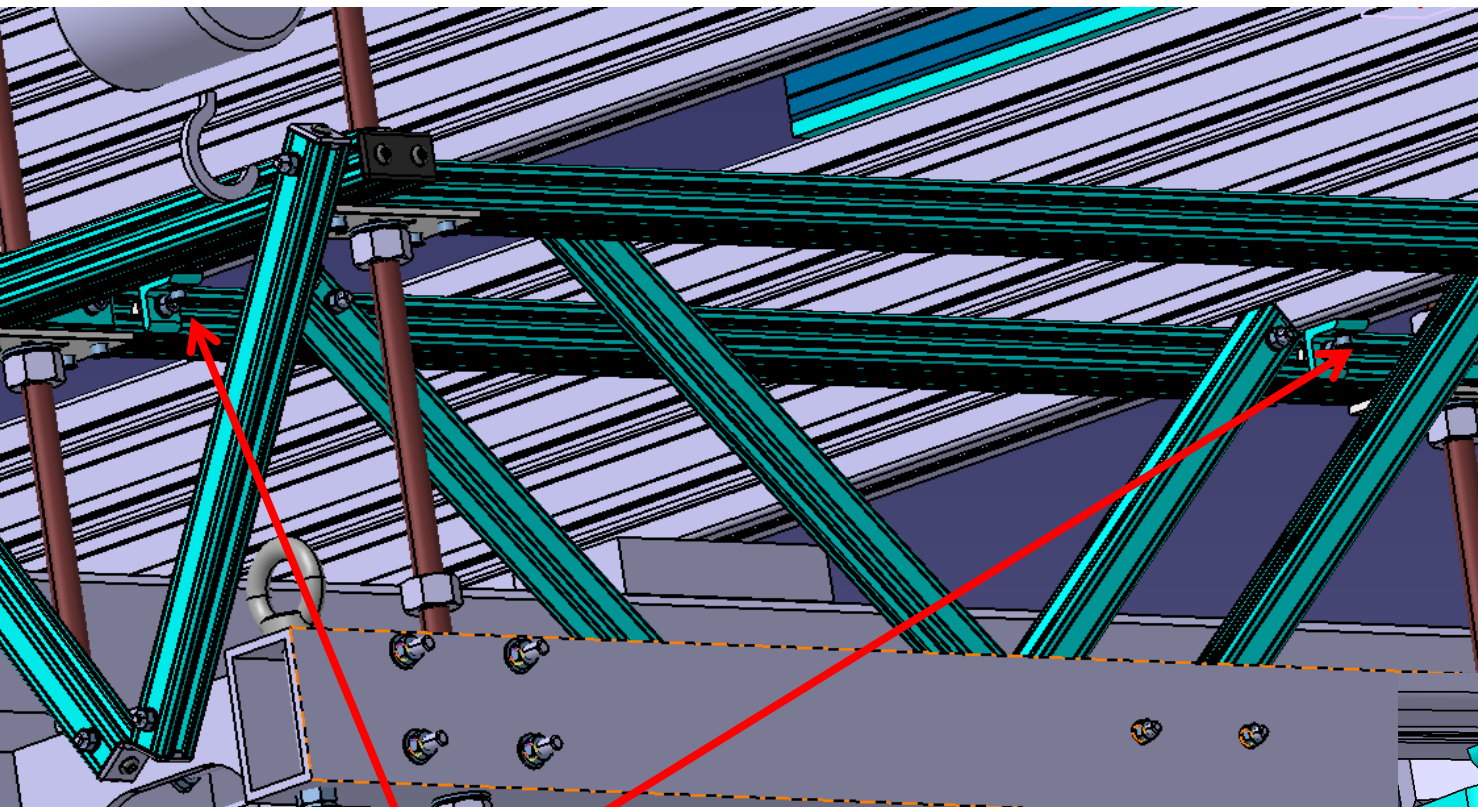
1) Remove the 8 reinforcement bars and the 6 intermediate plates

reinforcement
bars (8)

intermediate
plates (3x2)

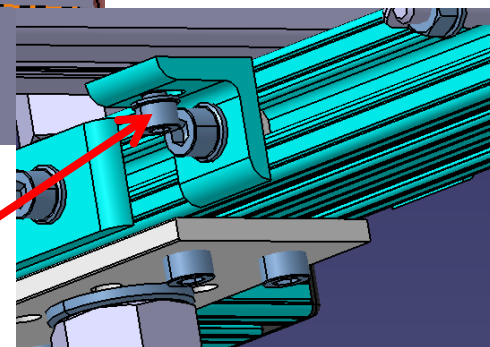


2) Unclench the 4 translation fixing parts



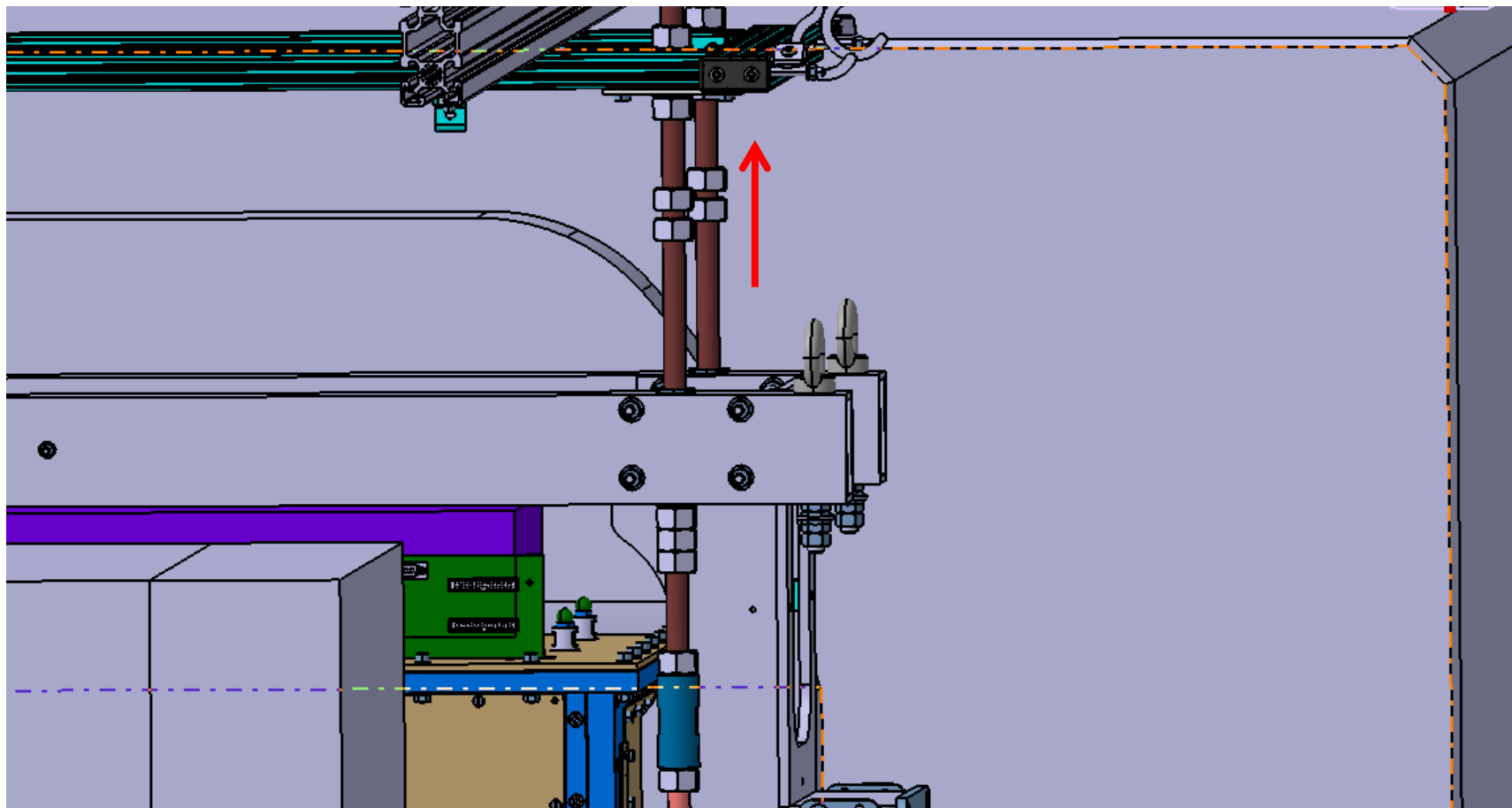
Translation fixing parts
(inside the frame)

**Unclench only the
top screw and
don't make it fall**



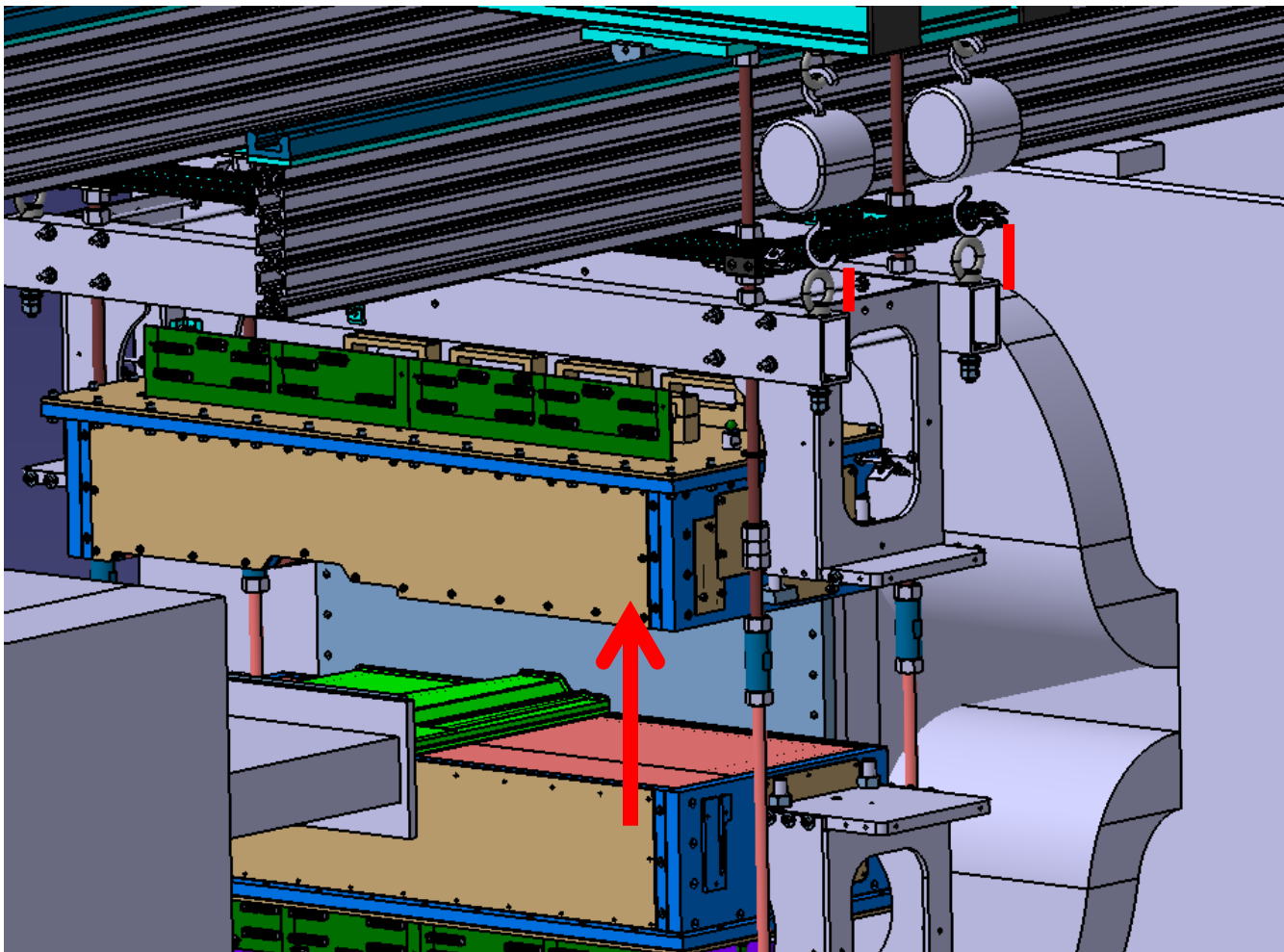
3) Move up the 2 screws of the Top ECal

Check the position of the bottom nut versus the mark and keep the two red nuts in their exact position



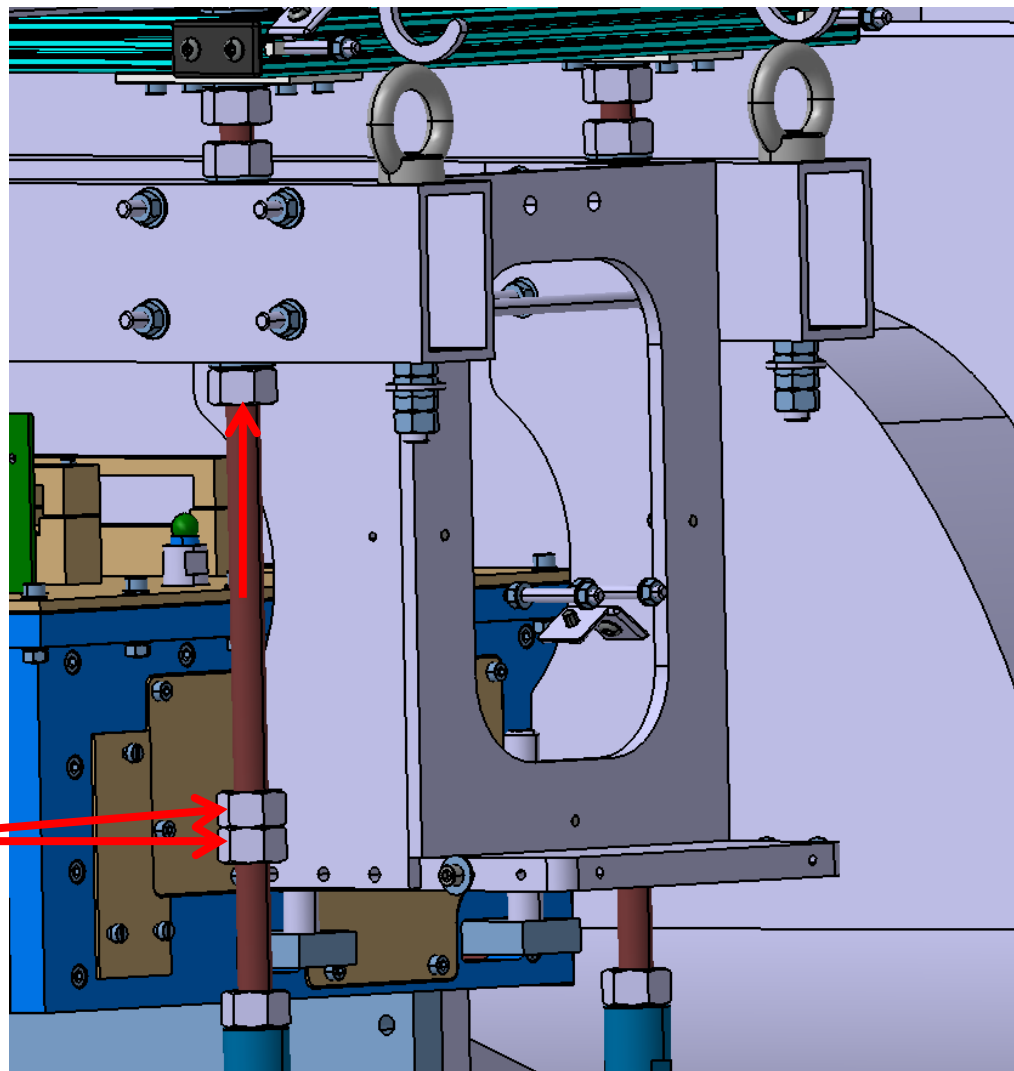
4) Move up the Top ECal with the 4 lifting tackles

Check the cables and the boards while moving up



Be careful to move the ECal horizontally , it just needs to be higher than the vacuum box back flange of the Frascati magnet

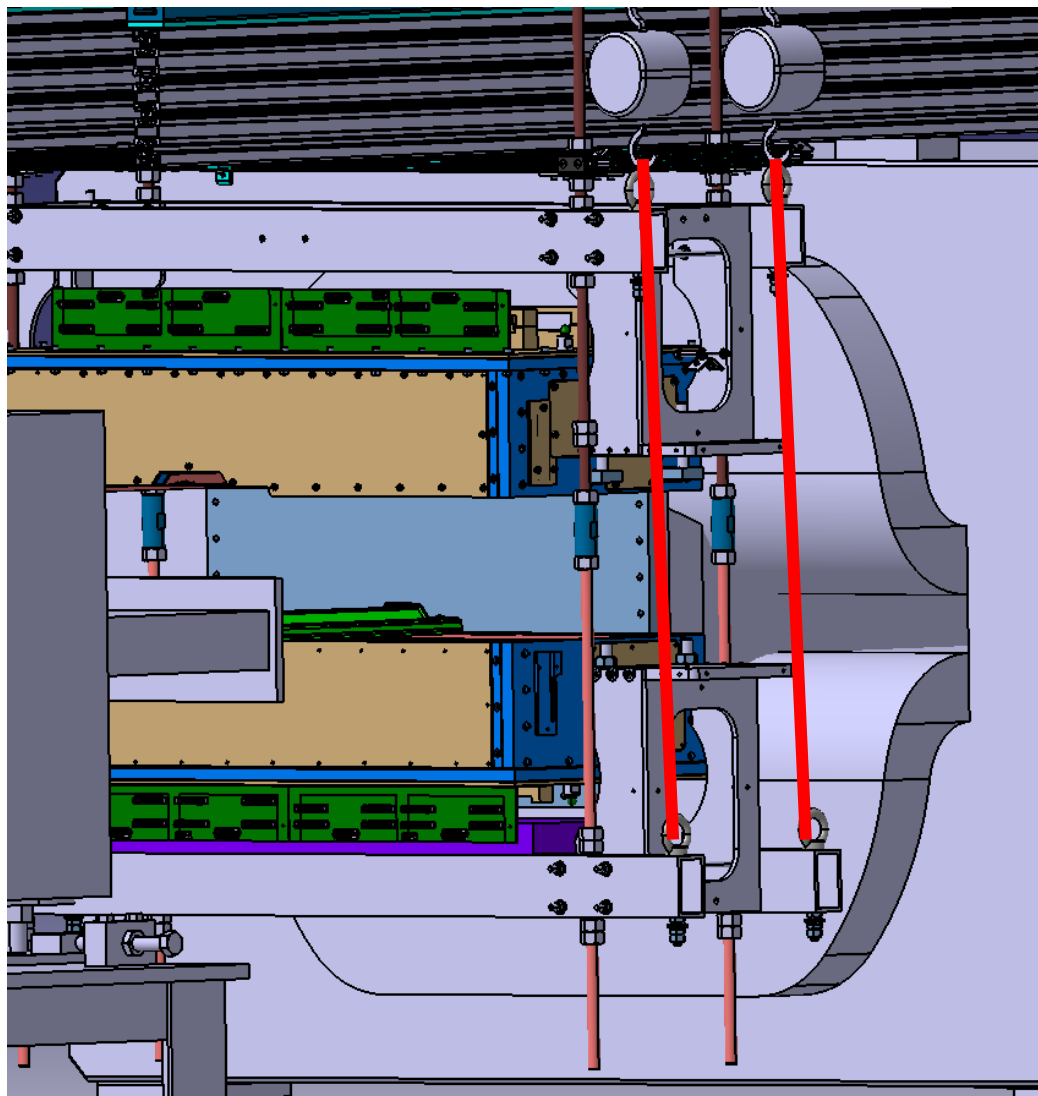
5) Maintain the Top ECal with the nuts



Reference
nuts (locked,
painted in
red)

**Be careful when you move the nuts not to move
the 2 reference nuts (painted in red)**

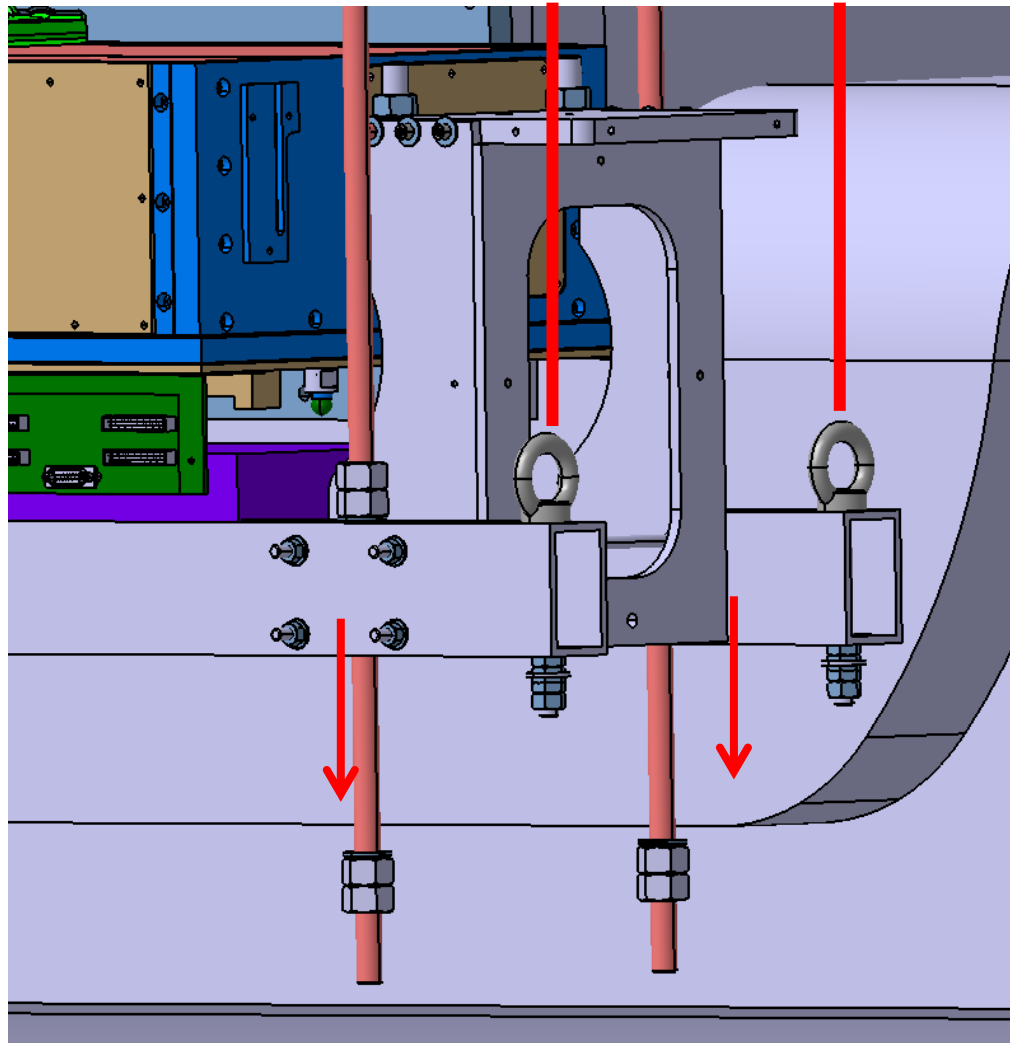
6) Maintain the Bottom ECal with the 4 lifting tackles



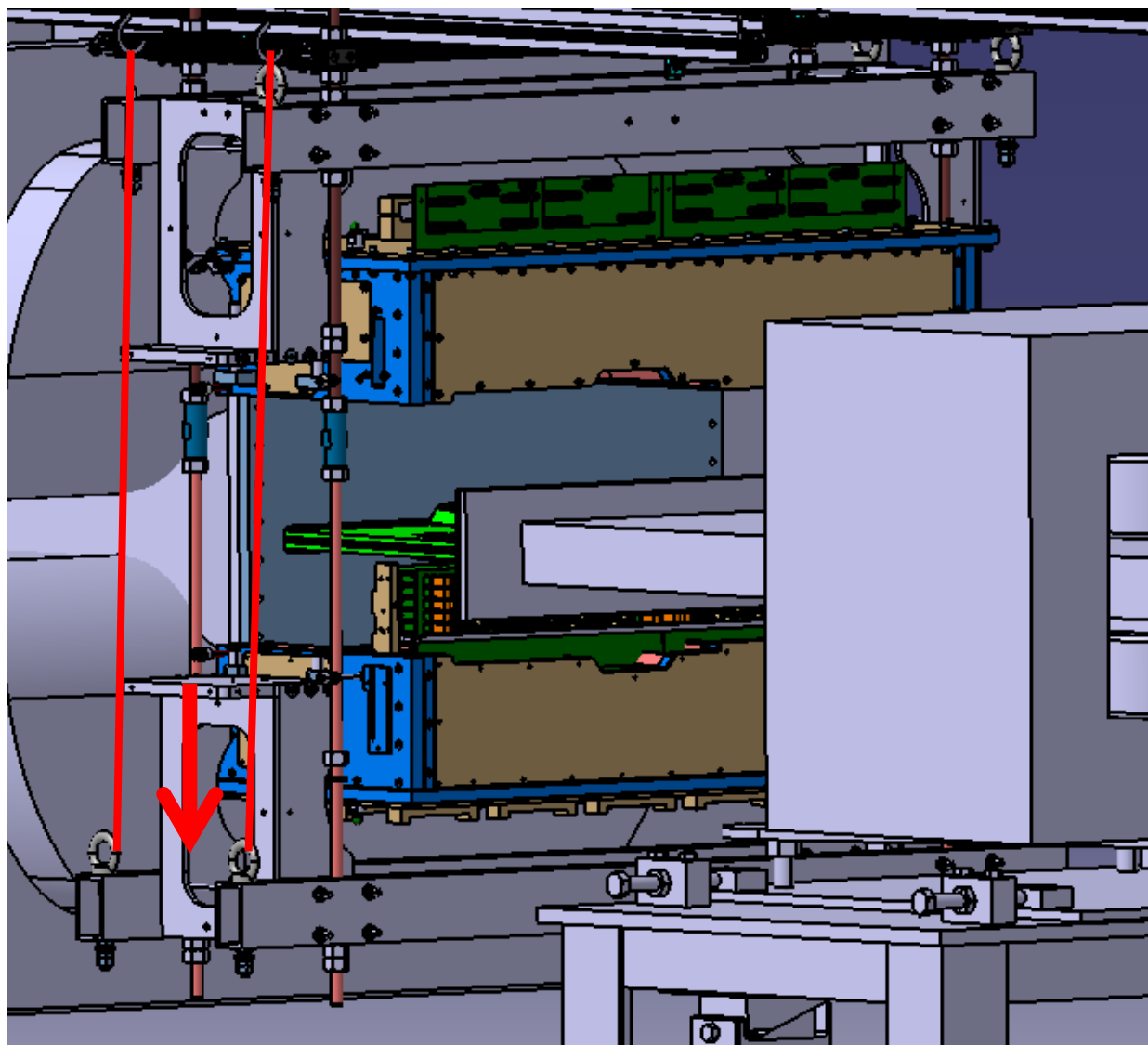
7) Move down the bottom nuts

**Before removing the nuts make sure
the FOUR chains of the lifting tackles are in tension**

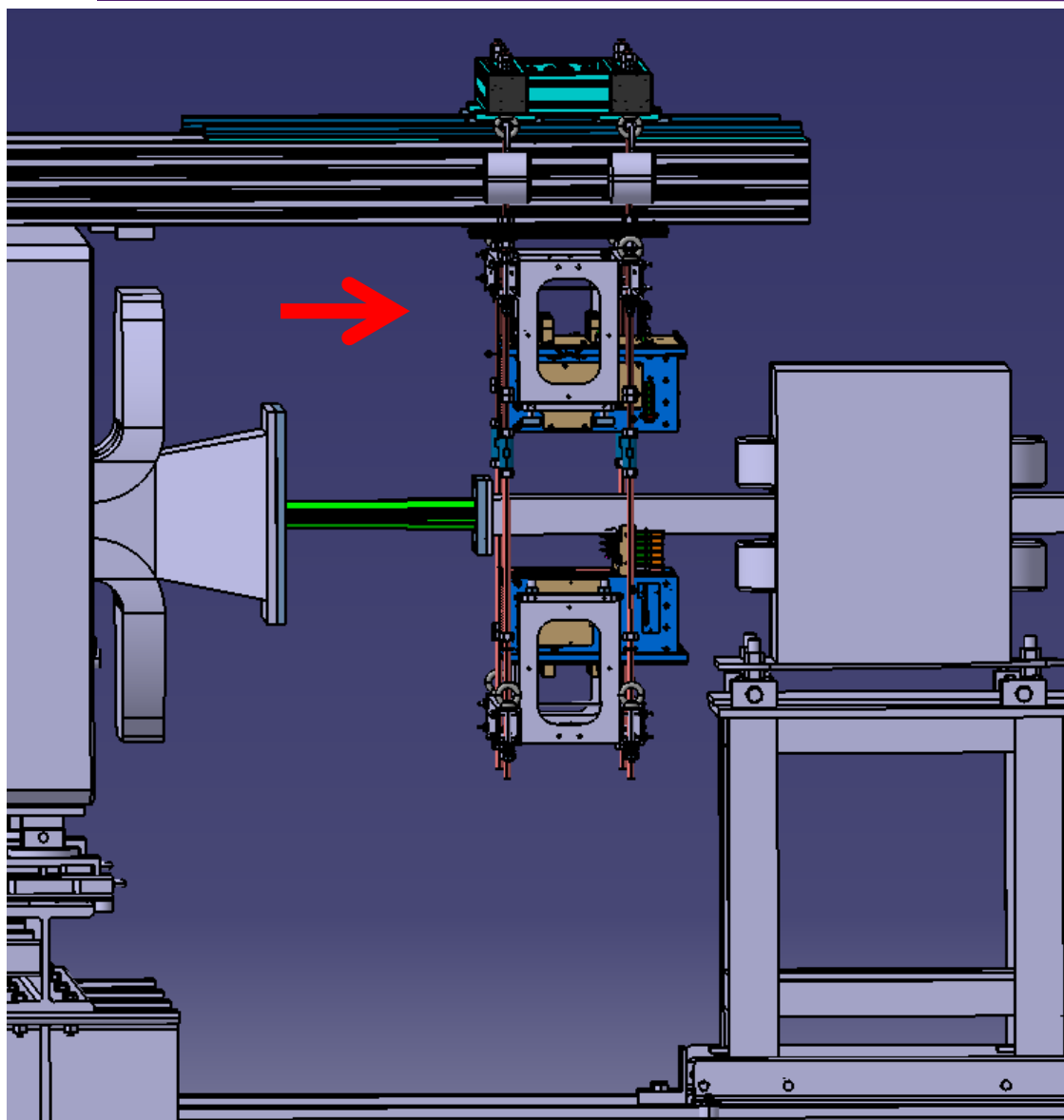
**Check the
position of the
nuts versus
the marks and
keep the two
red nuts in
their exact
position**



8) Move down the Bottom ECal with the 4 lifting tackles



9) Slide the trolley



2) Replacement

0) Check the position of the vacuum chamber



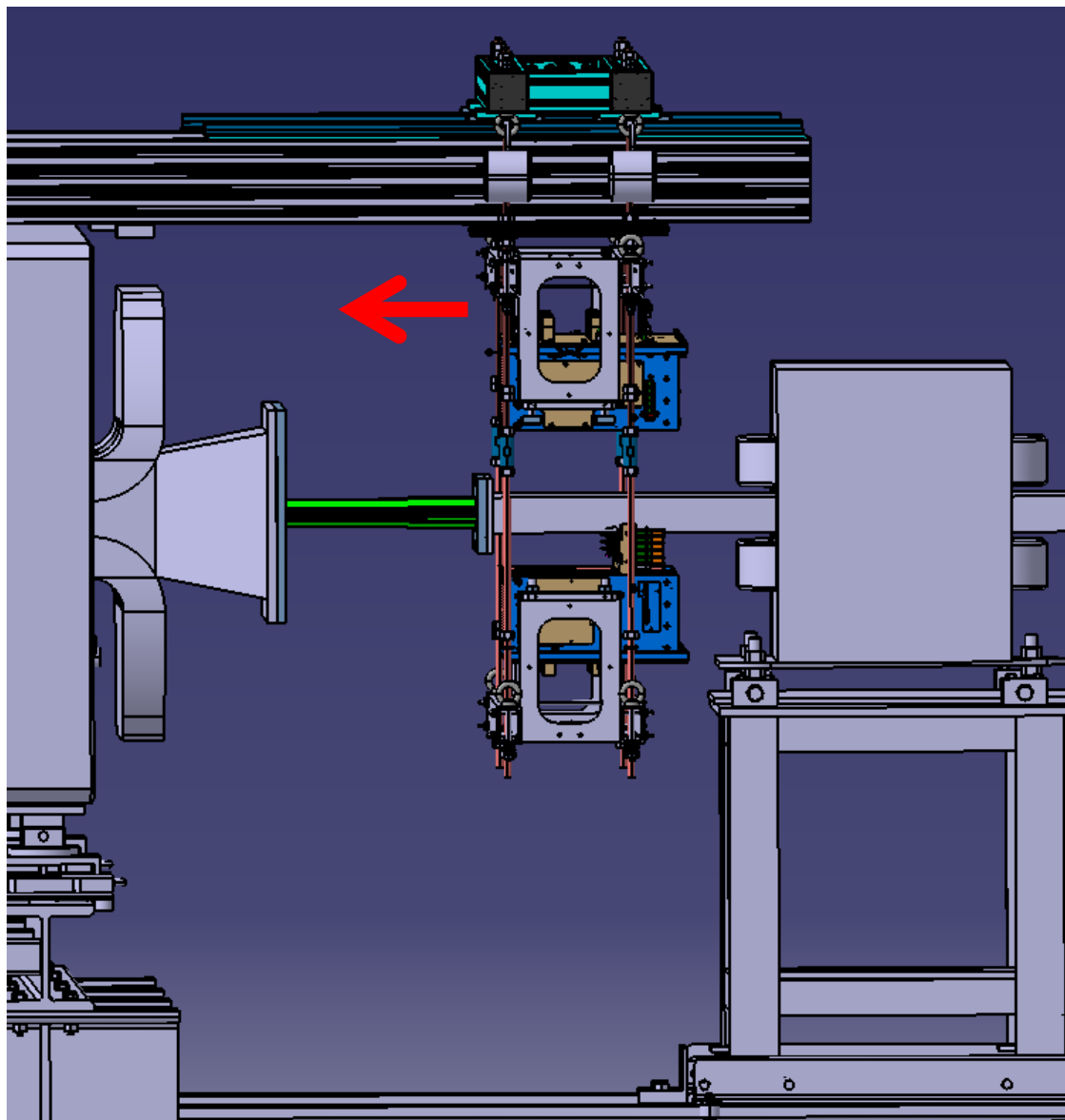
Marks on
each side of
each flange

If the vacuum chamber has been moved from its original , one should first try to replace it where it was.

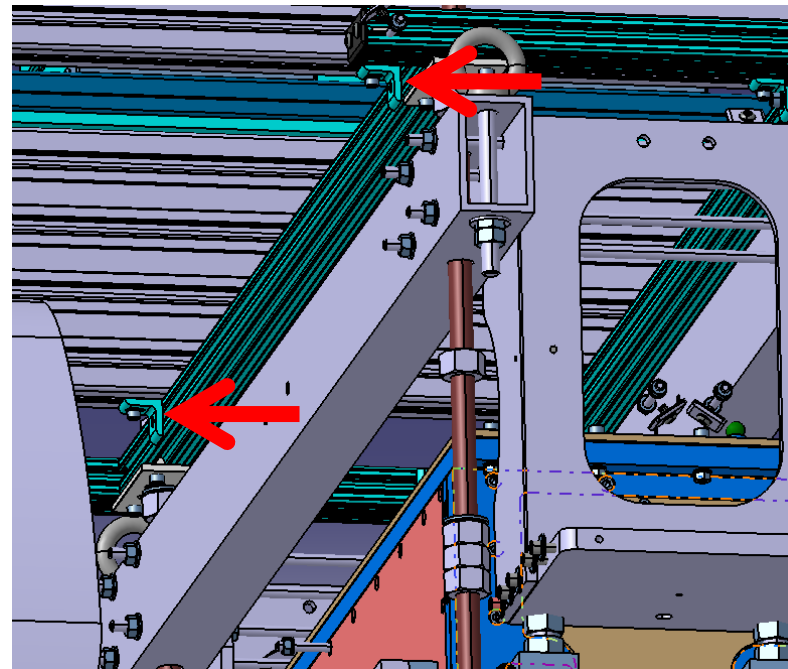
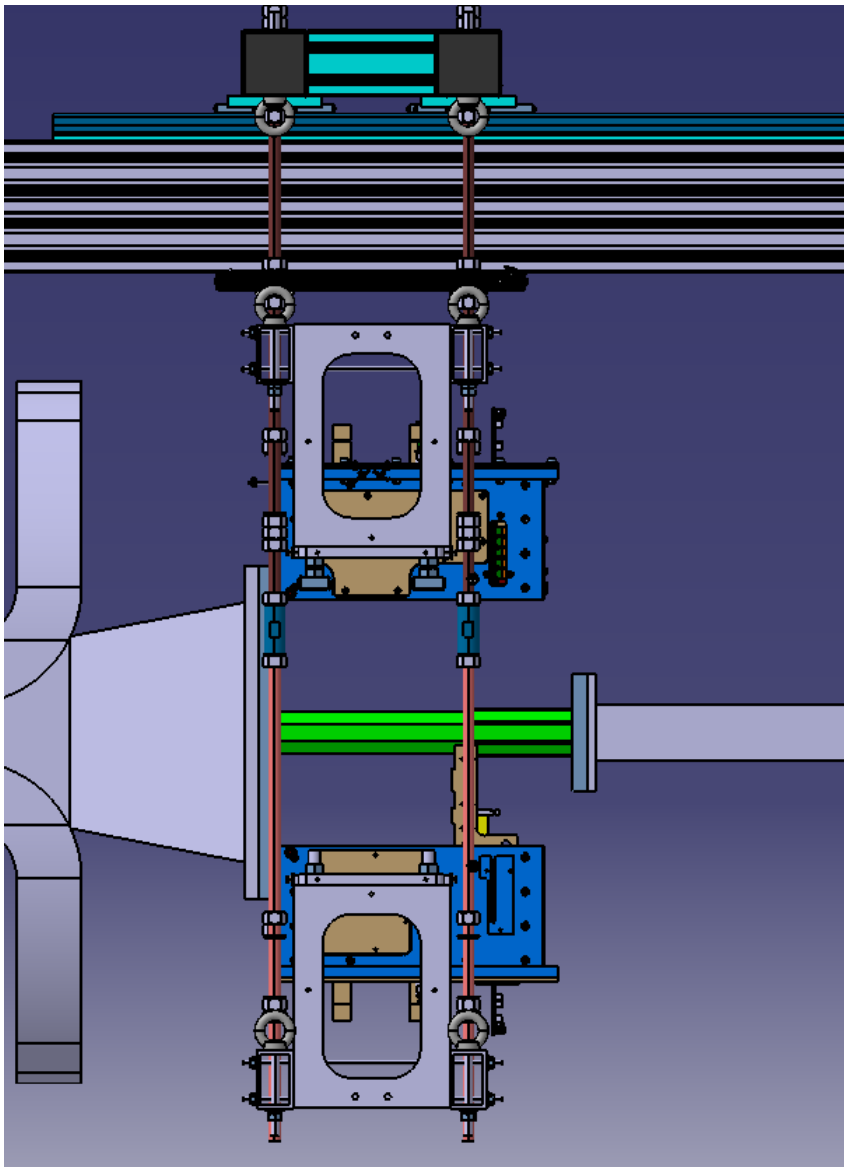
If it is not possible the position of the Ecal can be changed but it is a lot work as it implies ungluing nuts.

Only experts are allowed to do this.

1) Slide the trolley

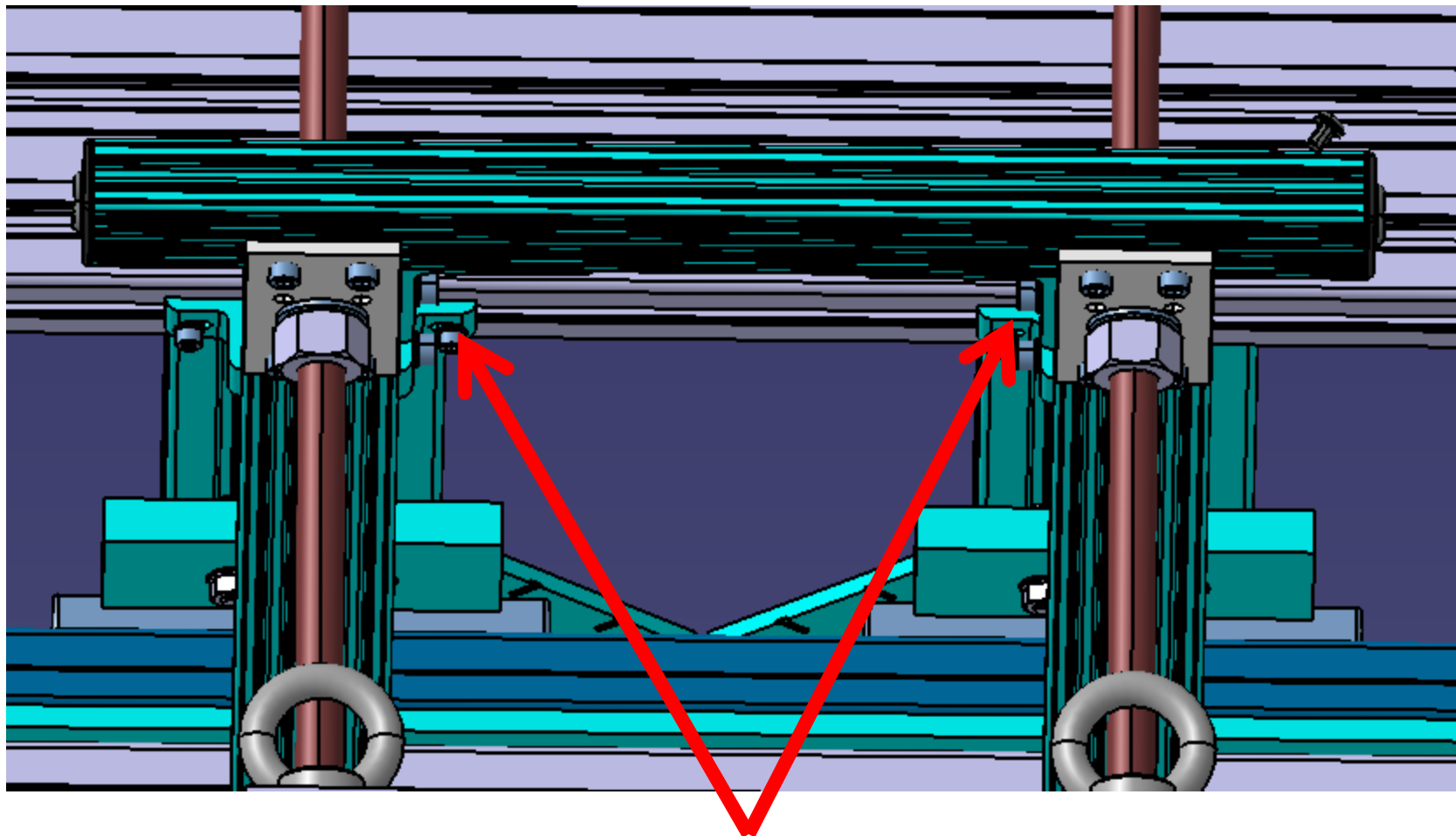


2) Push the trolley against the 2 stops



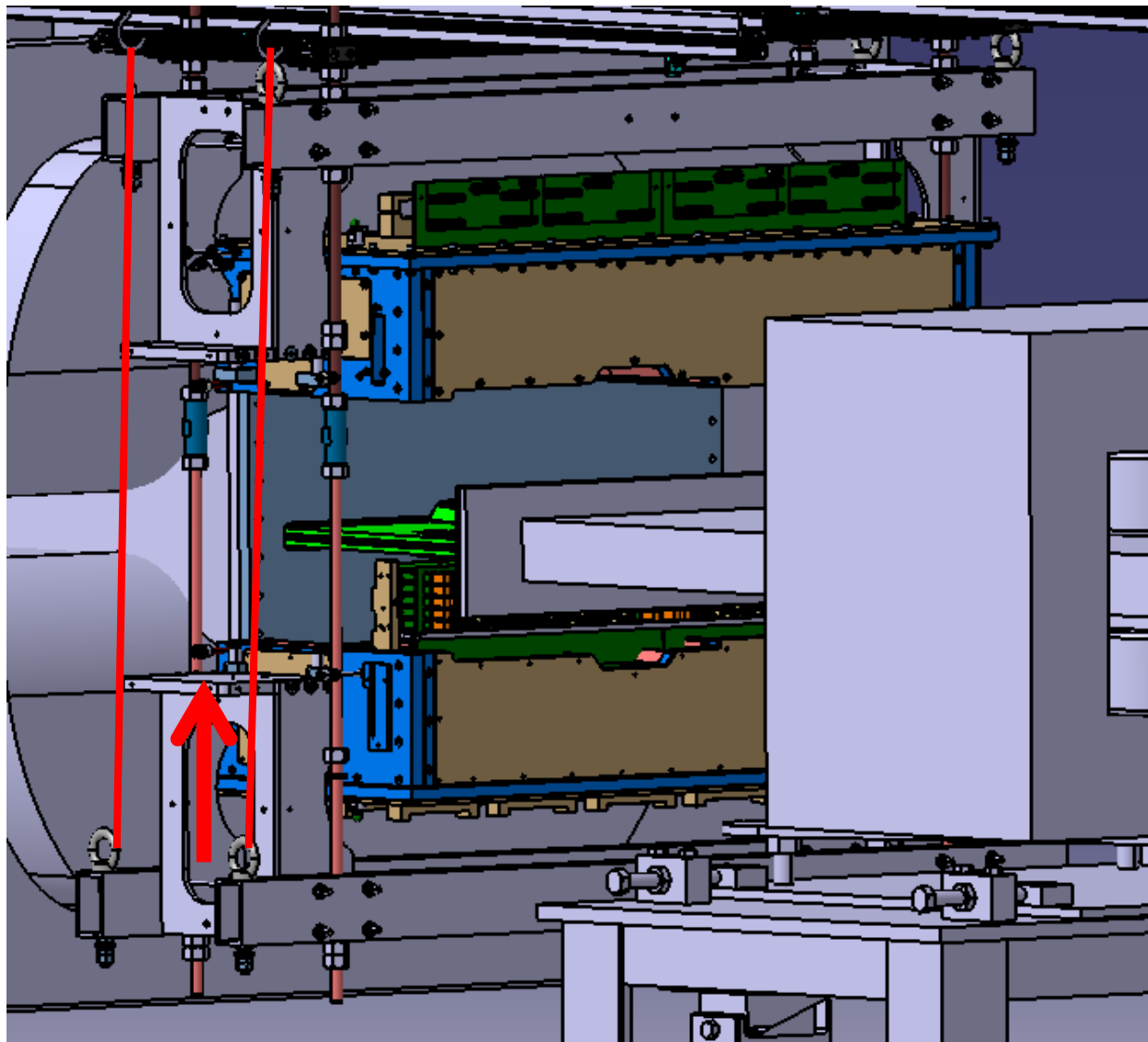
! Push (gently but strongly) then block the trolley against the 2 stops in order to have the good gap (2 mm) and the parallelism between the vacuum chamber flange and the ECals

3) Translational locking

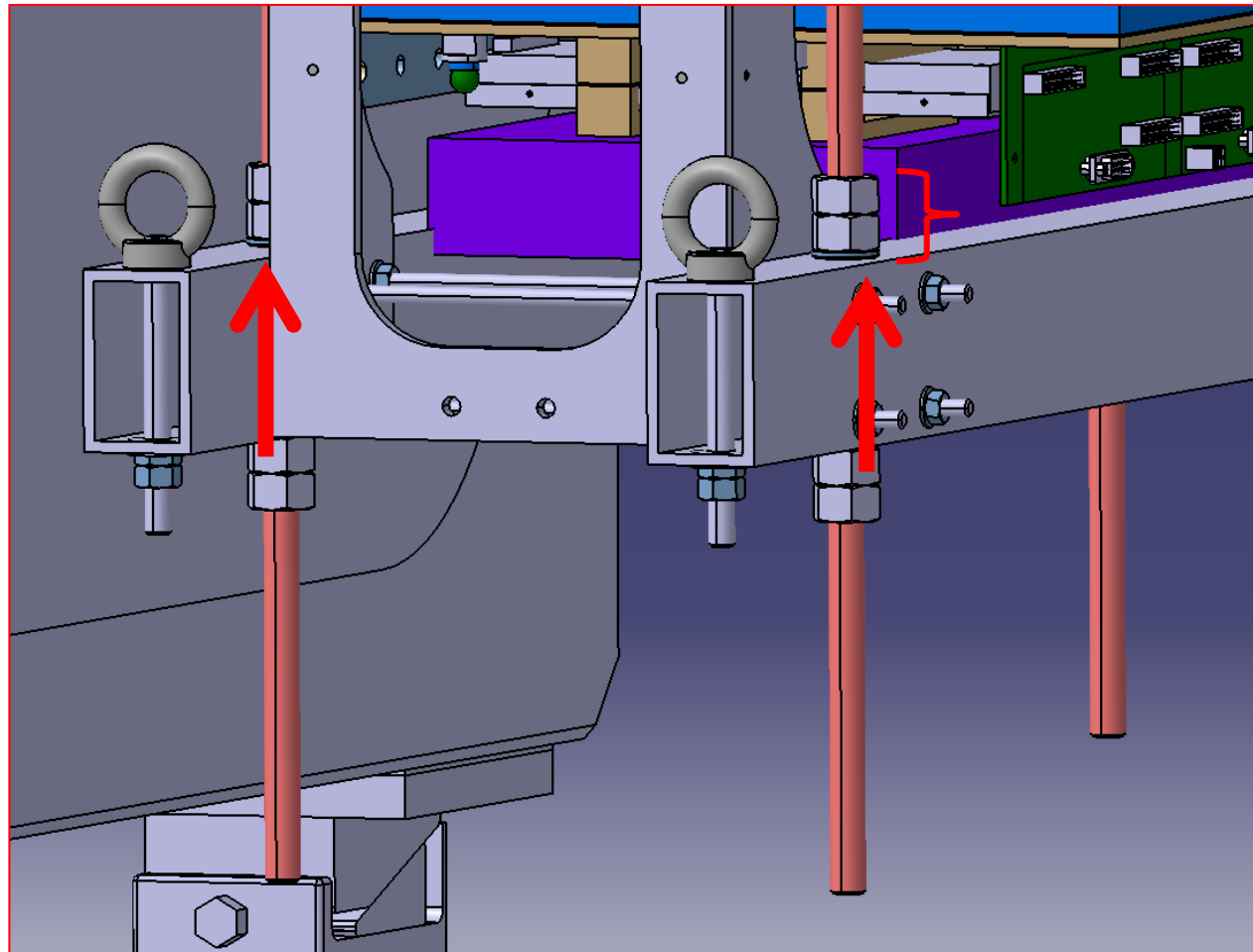


Lock the 4 screws (maintain the trolley on the stops)

4) Move up Bottom ECal with the 4 lifting tackles until it touches the reference nuts on the 4 corners



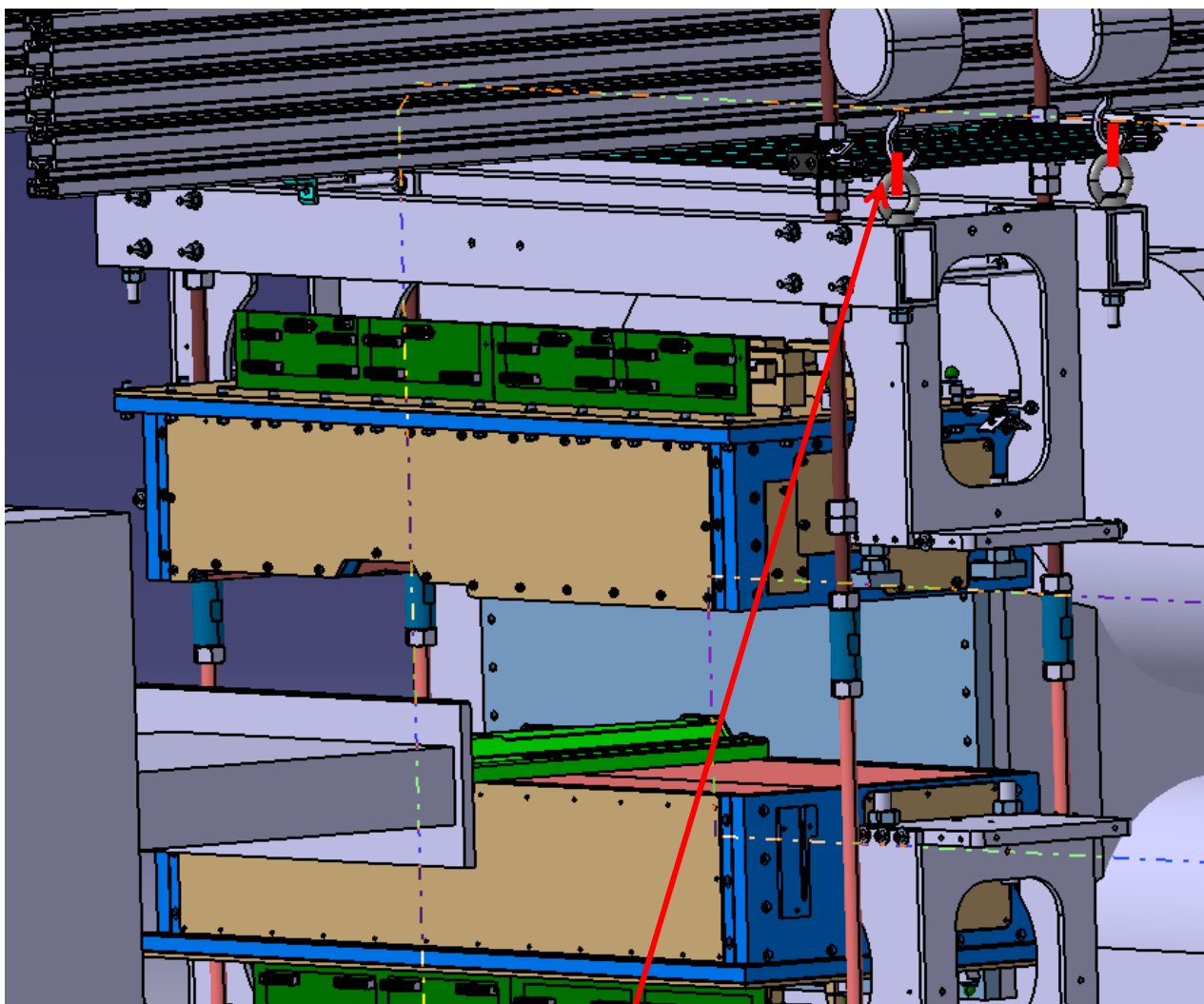
5) Tighten the bottom ECal on the reference nuts with the two bottom nuts on each rods



Bottom Reference nuts must never be loosen

It is probably not enough to use the tackles to bring the Ecal right against the reference nuts, if so, place it as close as possible then it is easy to move the ECal up by screwing the nut with a wrench.

6) Maintain the Top ECal with the 4 lifting tackles

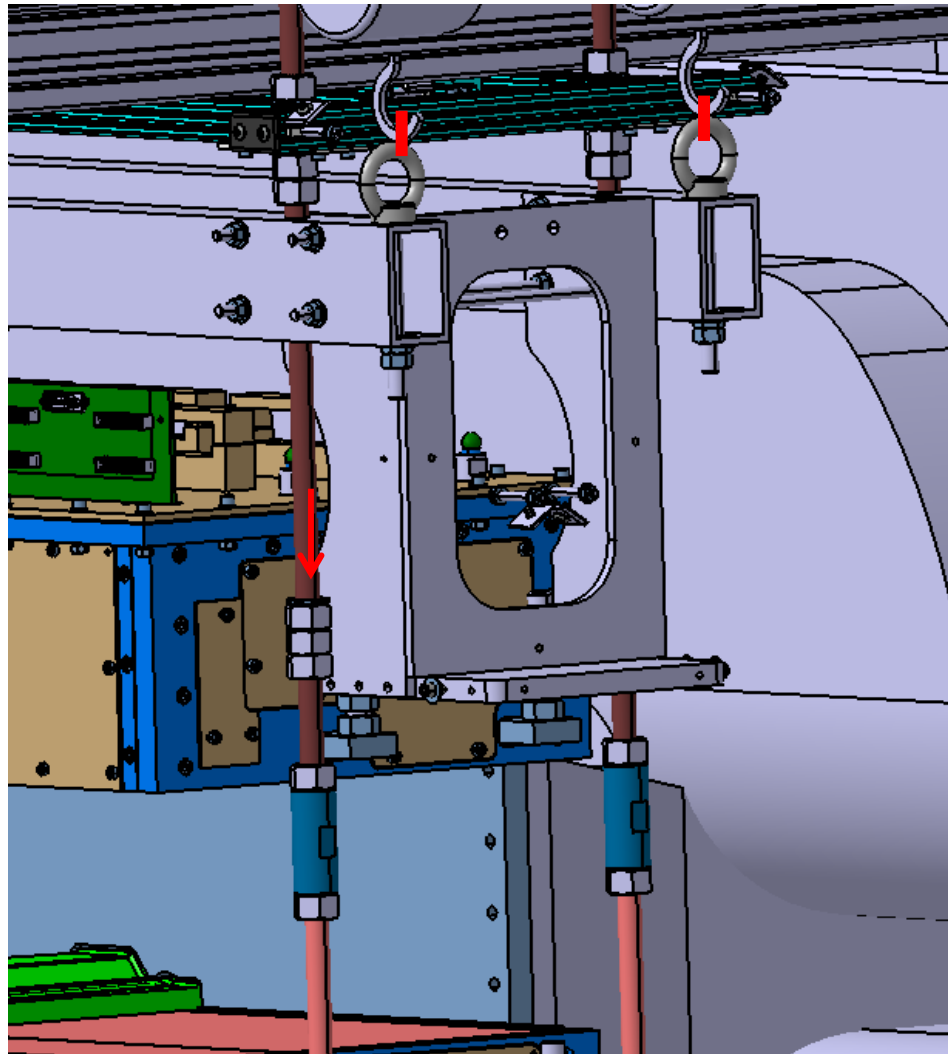


The four chains of the lifting tackles must be in tension

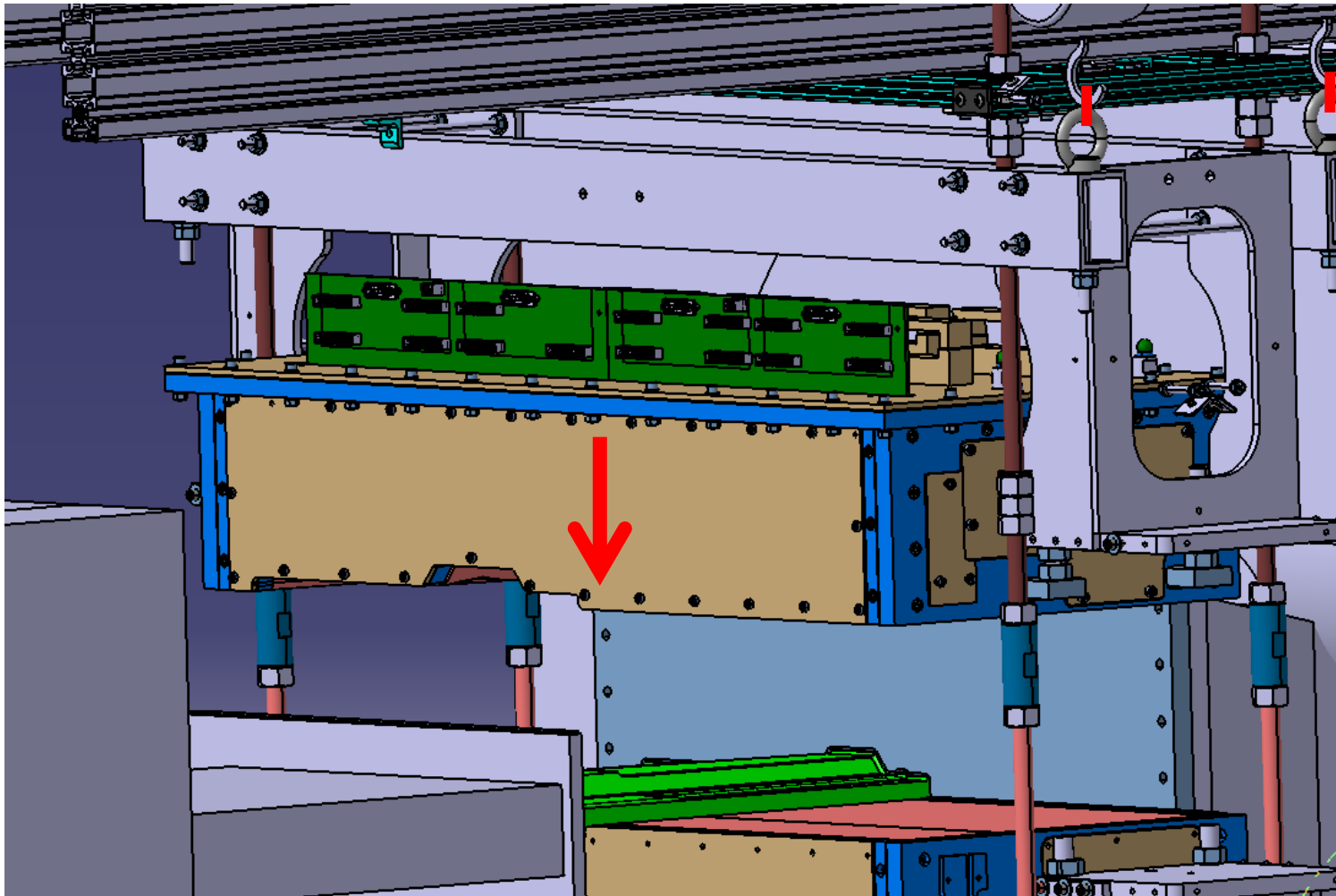
7) Move down the 4 bottom nuts

**Before removing the nuts make sure the 4 chains
of the lifting tackles are in tension**

**Check the
position of the
nuts
versus the
marks and
keep the 2
red nuts in
their exact
position**



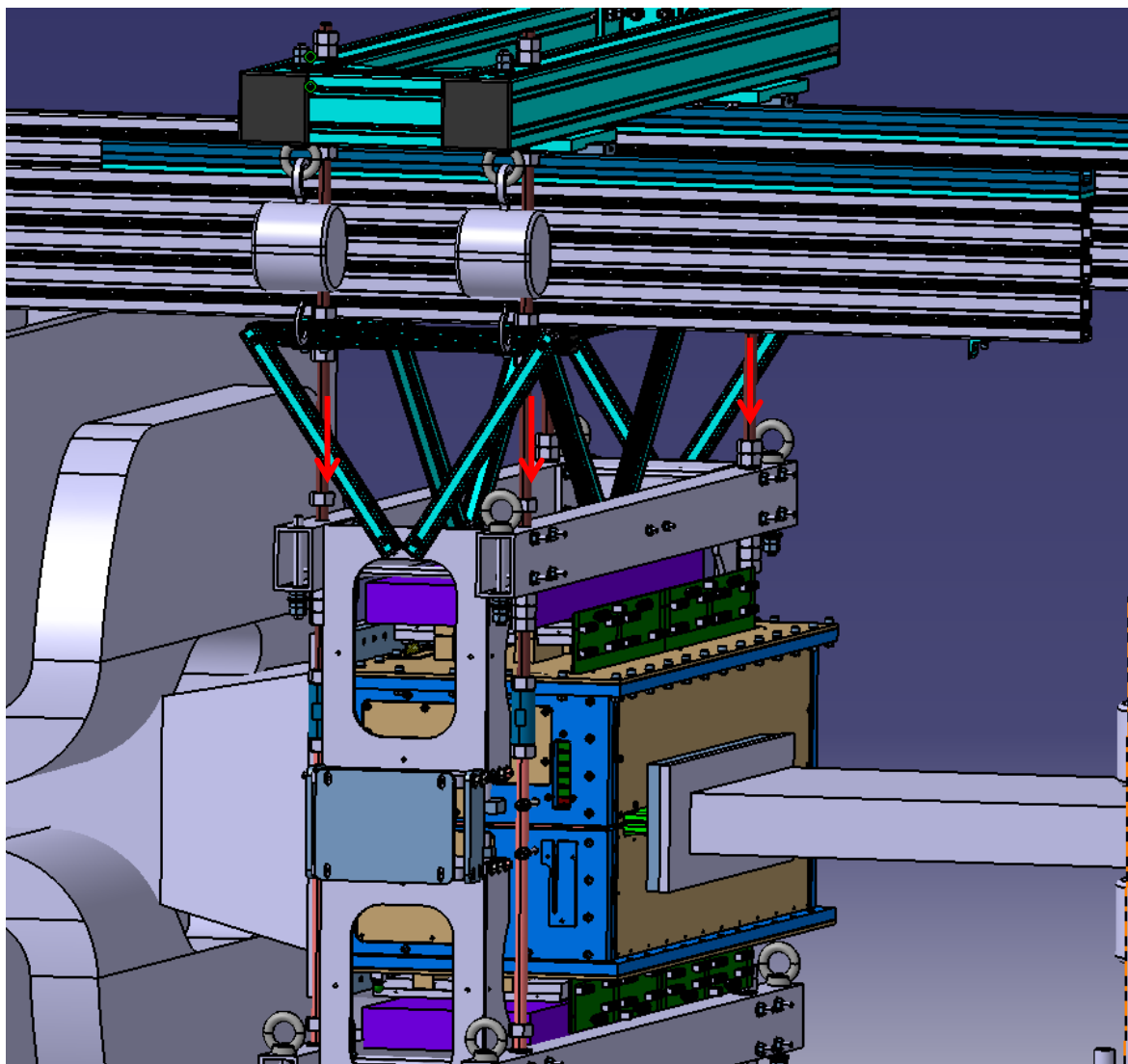
8) Move down the Top ECal with the 4 lifting tackles



Be careful to move the ECal horizontally

Make sure the scratch on each nut is facing the scratch on the structure

9) Tighten the Top ECal against the top reference nuts



**Reference
nuts must not
be loosen
(painted in
red)**

10) Put the 8 reinforcement bars and the 6 intermediate plates back

reinforcement
bars

intermediate
plates

