

BONN SHUTTER: MECHANICAL INTERFACES

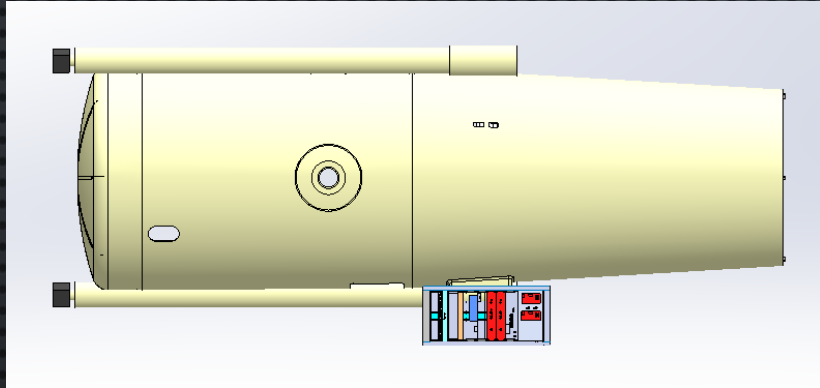
MICHAEL FEENEY

12.10.2015

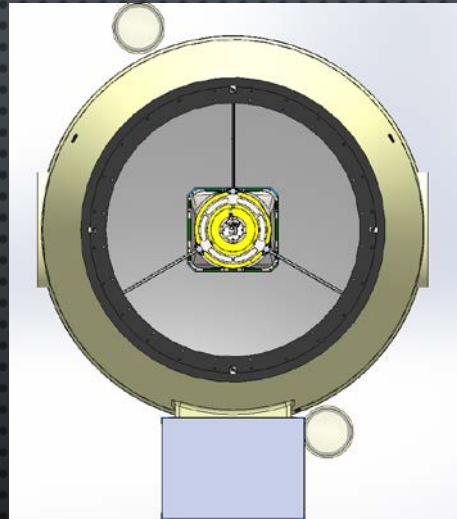
OUTLINE

1. TELESCOPE INTERFACE
2. BAFFLE INTERFACE
3. LIQUID PROTECTION SYSTEM

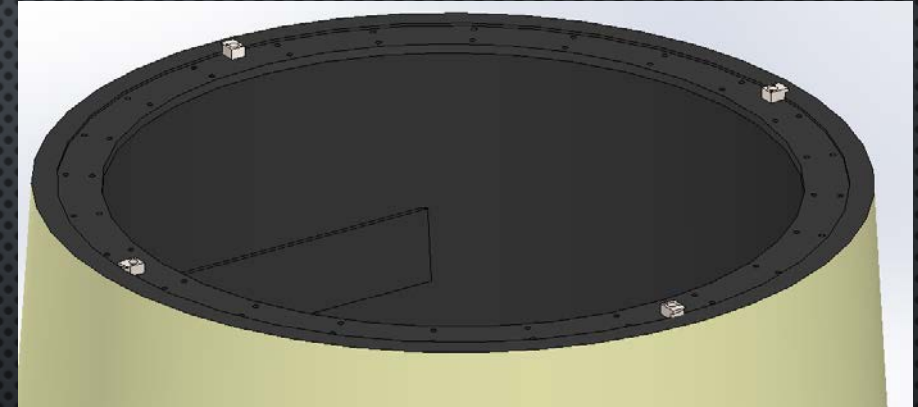
TELESCOPE INTERFACE



Side view of telescope tube.

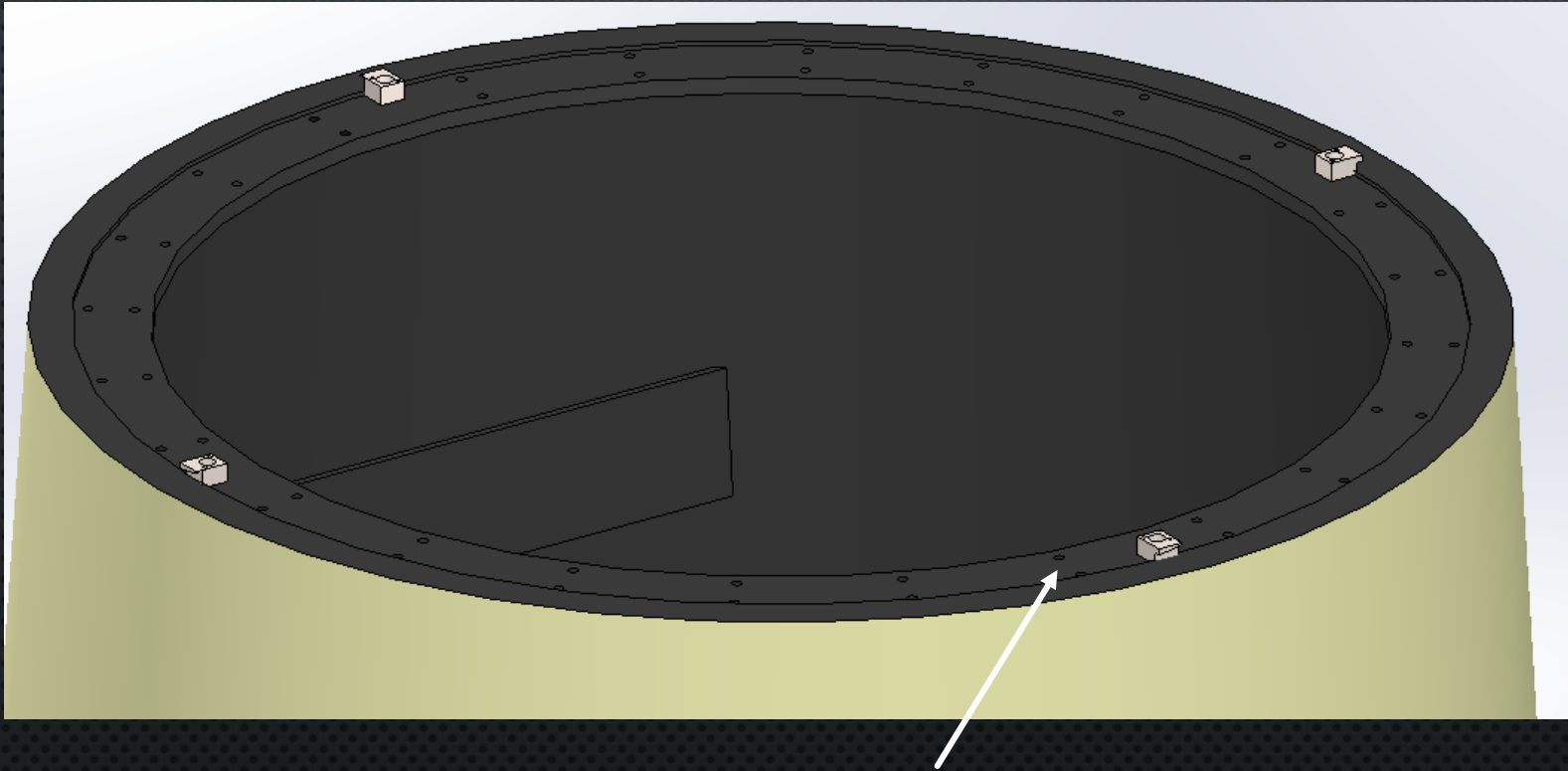


Front view of telescope tube.



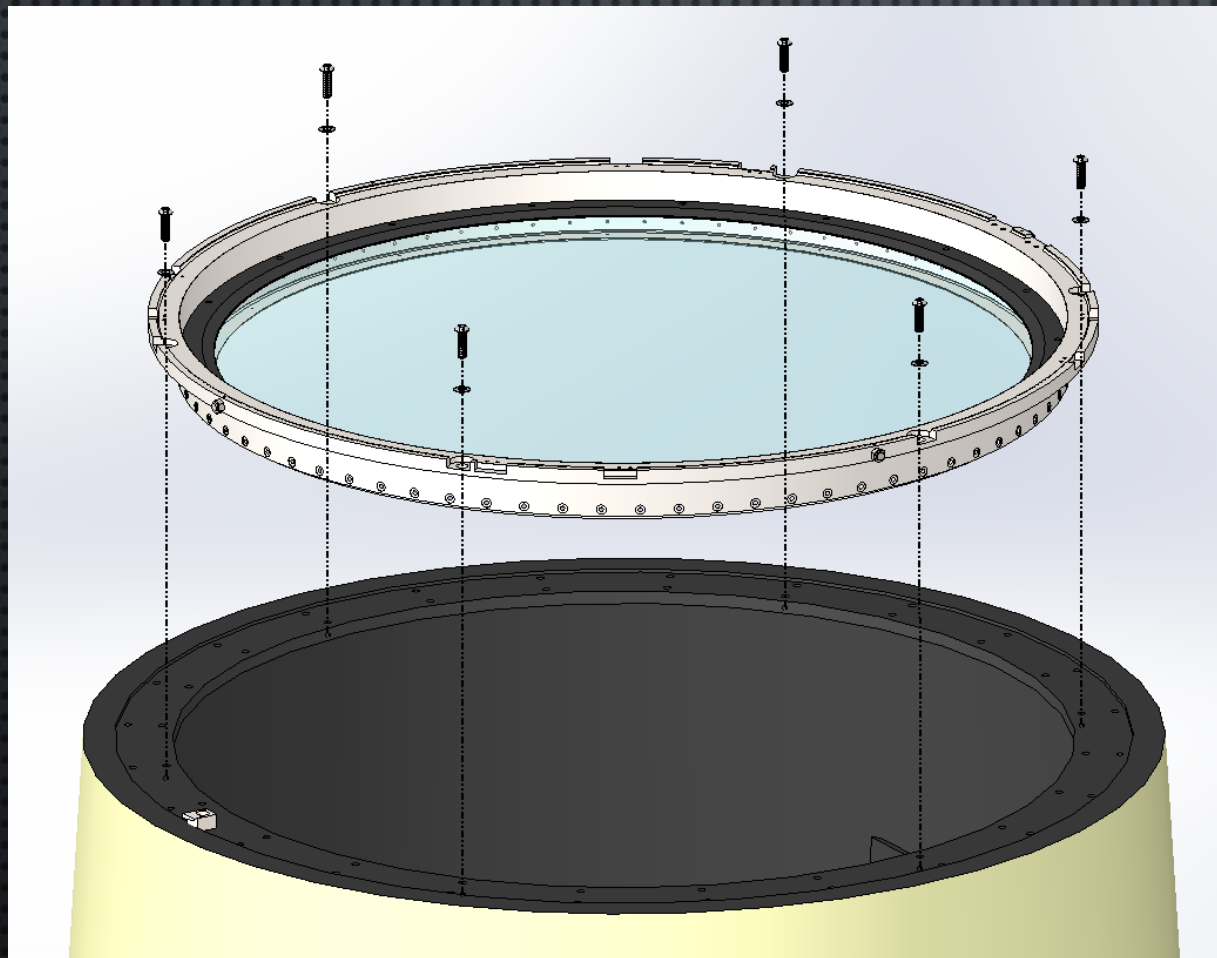
Detail view of telescope tube flange.

TELESCOPE INTERFACE CONT'D.



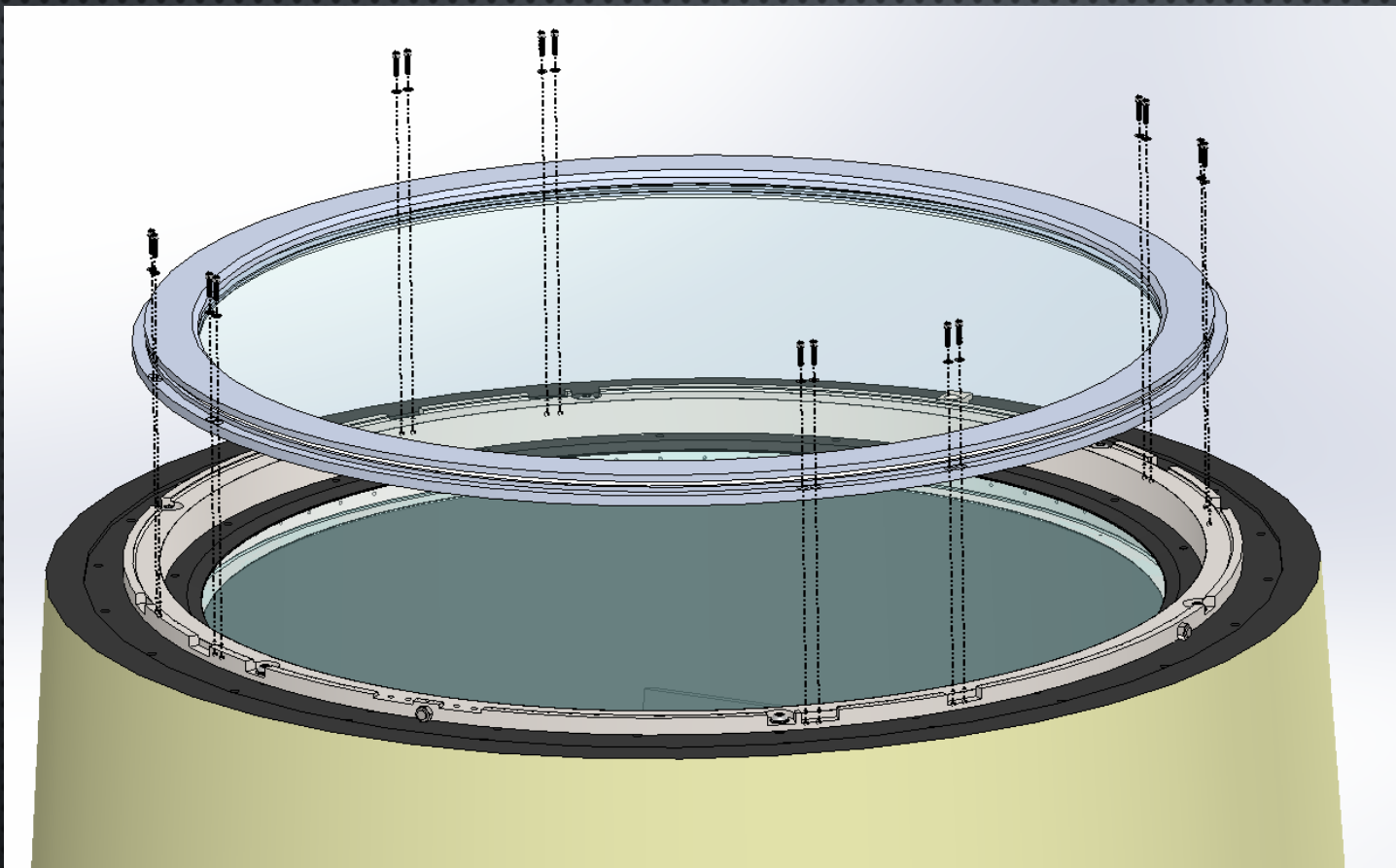
Bolt Patterns:
24X $\frac{1}{2}$ -20 on $\varnothing 56.125$ in
24X $\frac{1}{2}$ -20 on $\varnothing 60.250$ in

TELESCOPE INTERFACE CONT'D.



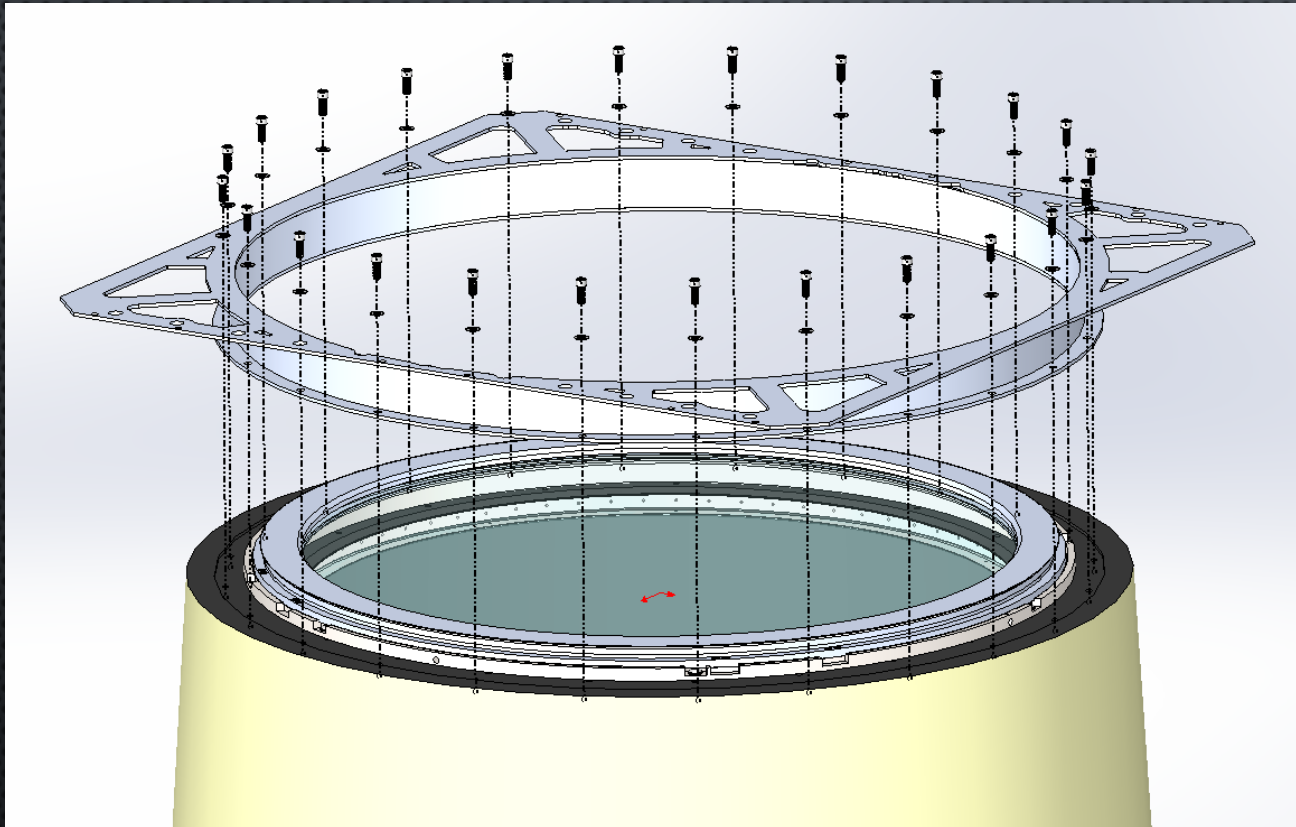
Doublet cell occupies inner bolt pattern (6X 1/2-20 on Ø56.125in)

TELESCOPE INTERFACE CONT'D.



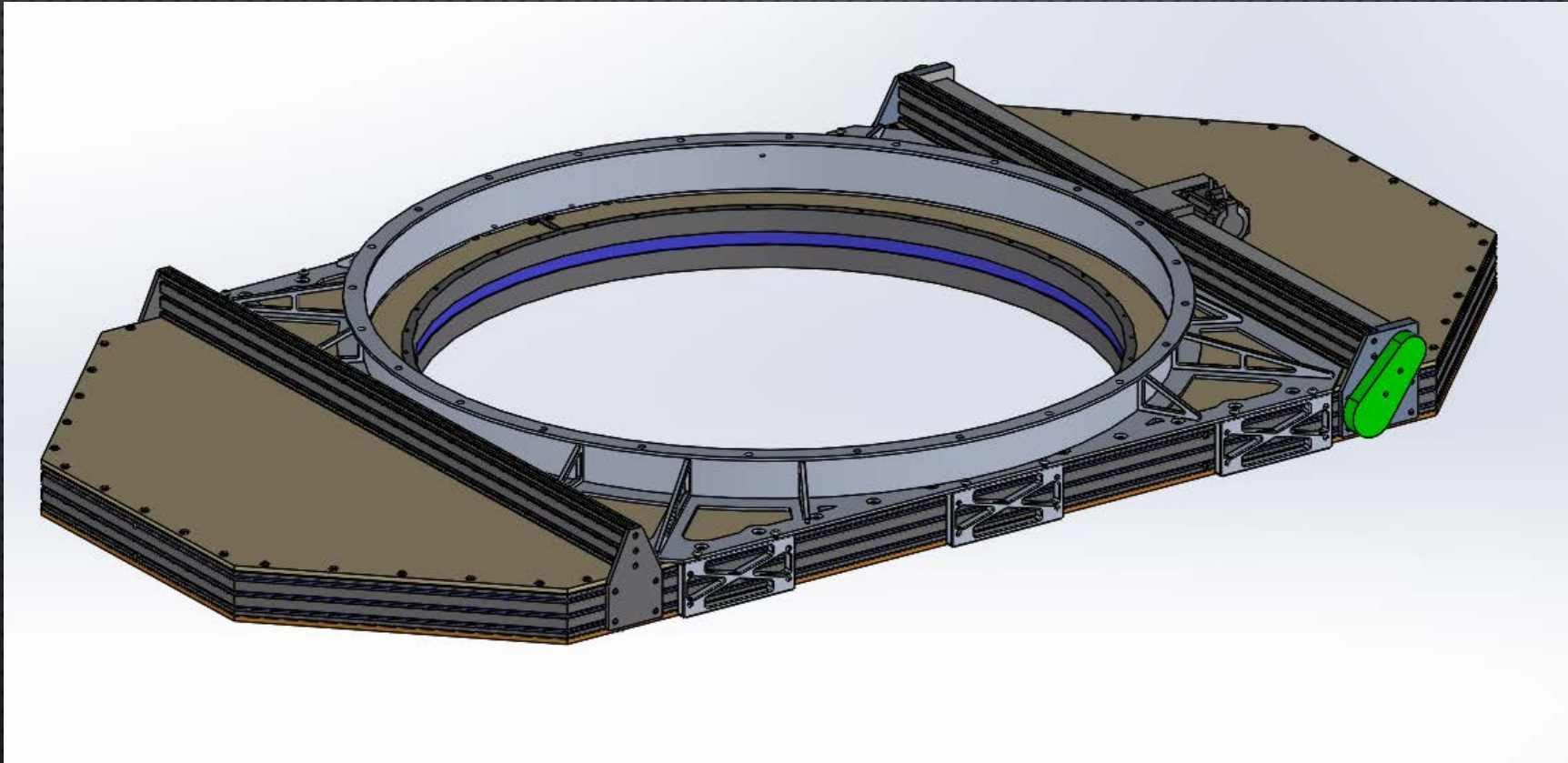
Singlet (Trim Plate) bolts directly to doublet cell.

TELESCOPE INTERFACE CONT'D.



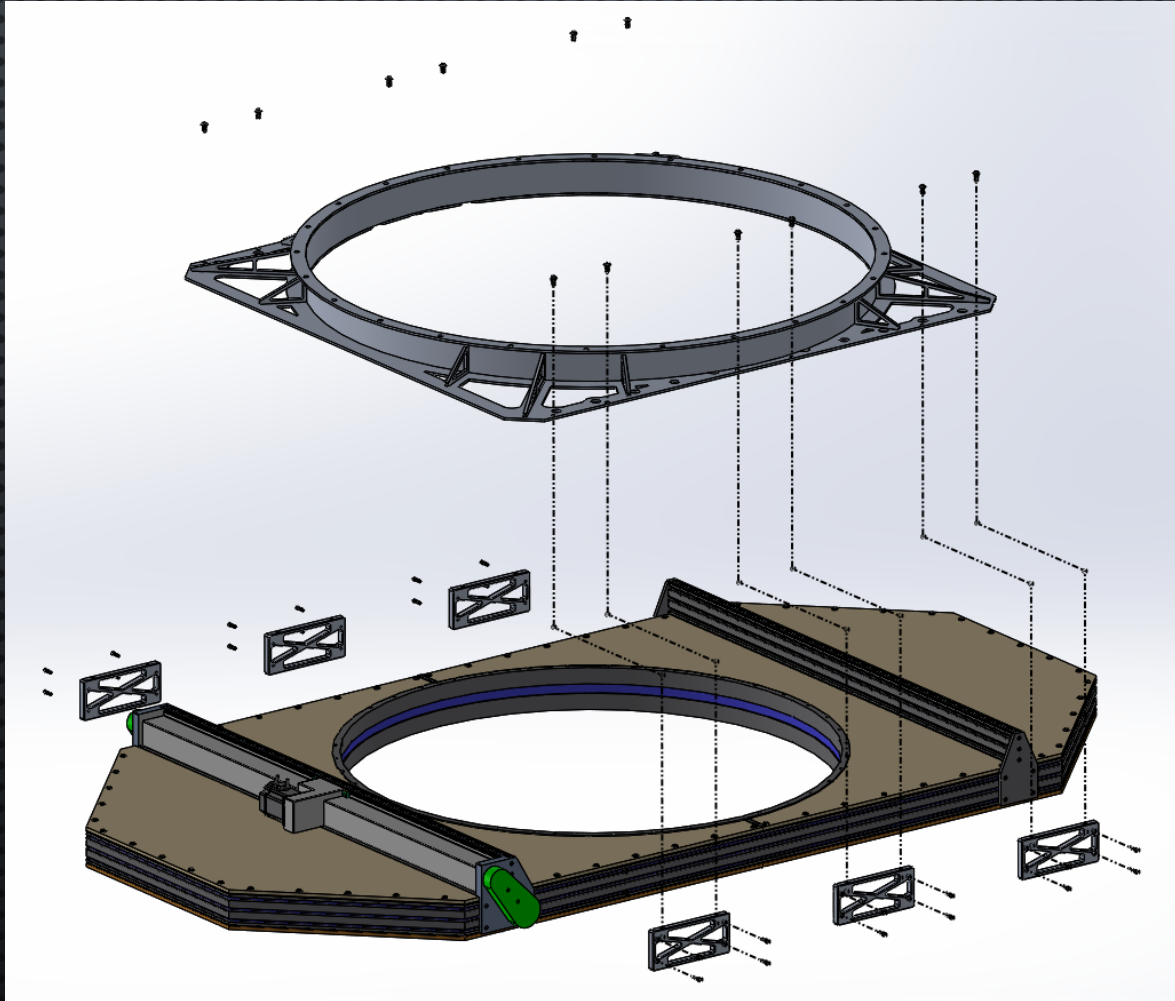
Shutter standoff occupies outer bolt pattern (6X 1/2-20 on Ø60.250in)

TELESCOPE INTERFACE CONT'D.

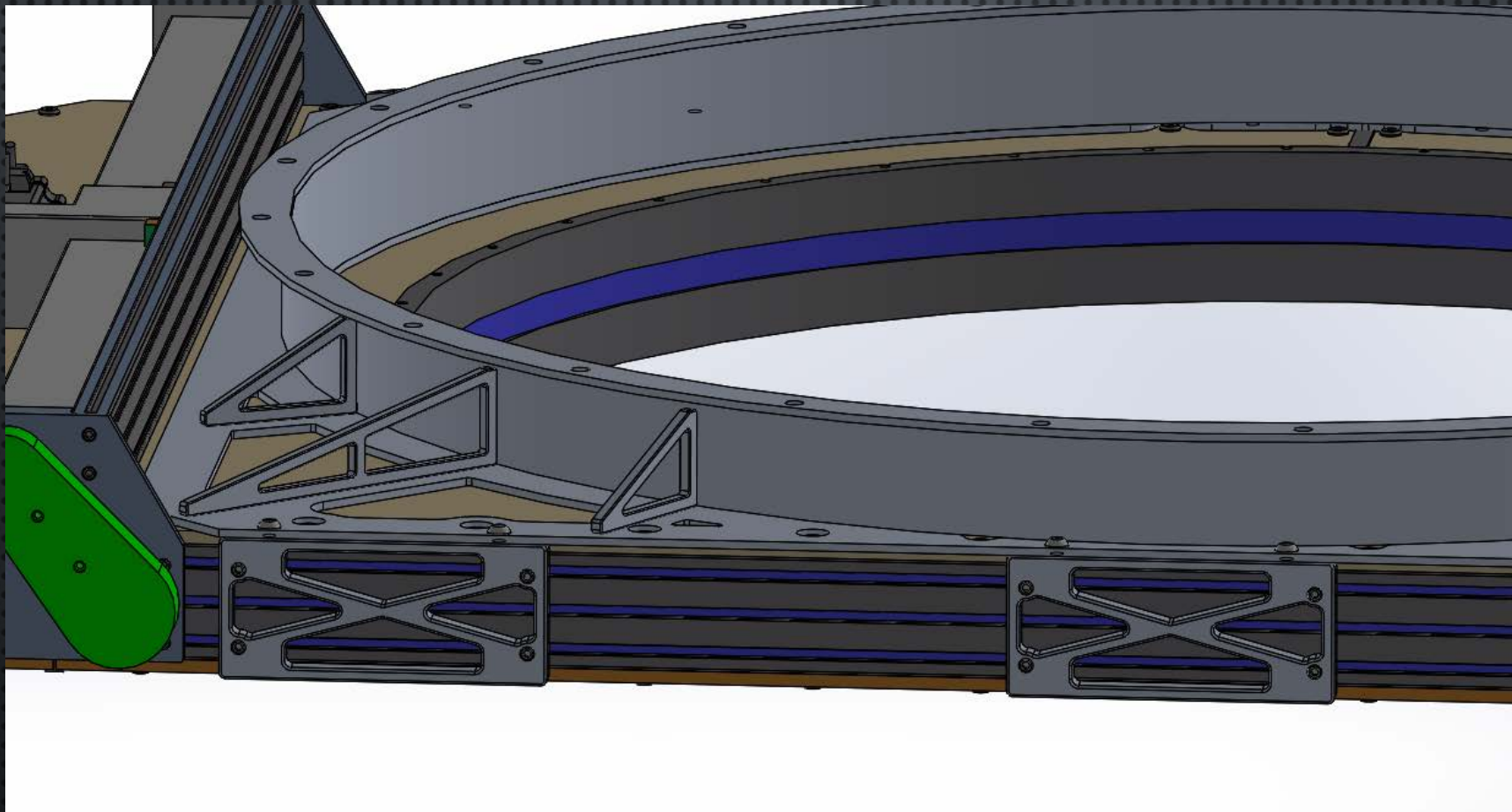


Shutter standoff attaches to the Bonn Shutter with 6X brackets that interface to the Misumi extrusion rails. The standoff vertical ring provides stiffness to the assembly and will prevent excessive force applied to the composite shutter leaf covers. The triangular gussets provide additional stiffness and allow the standoff assembly to attach to the Misumi extrusion rails. It is important that the brackets are easily accessible.

TELESCOPE INTERFACE CONT'D.

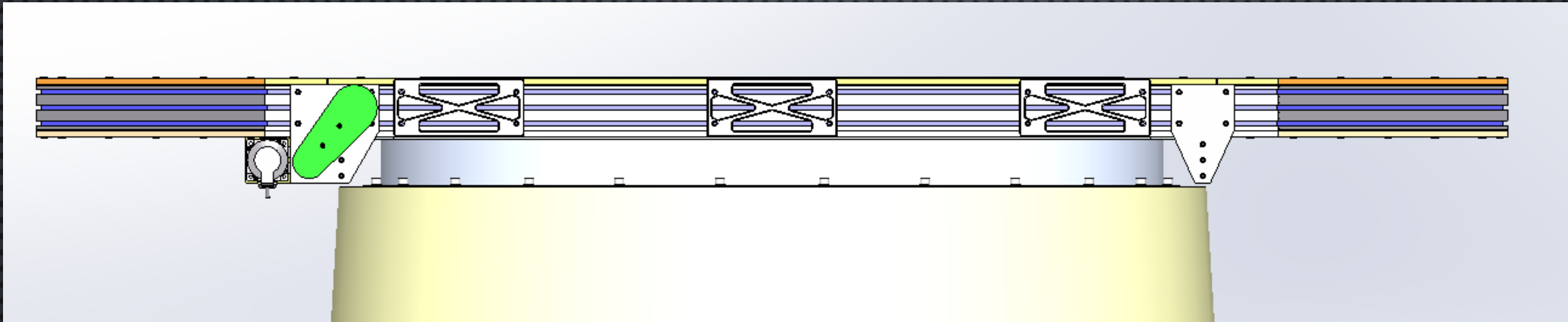


TELESCOPE INTERFACE CONT'D.

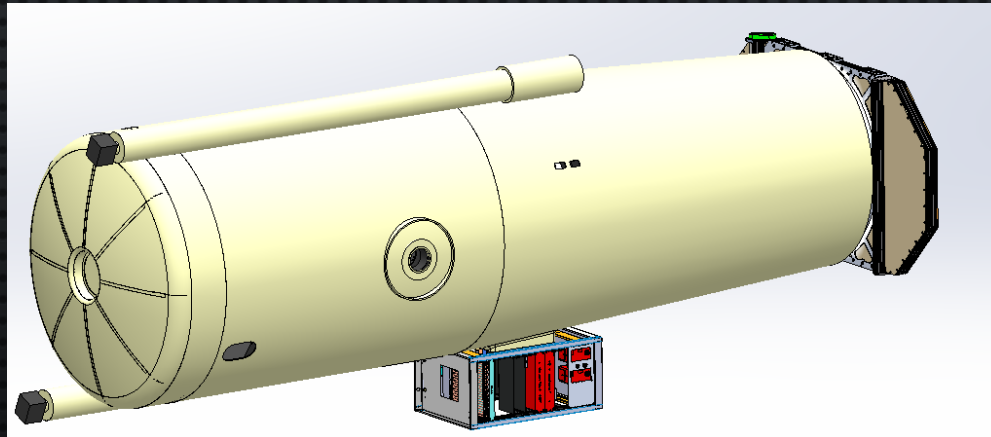


Detail view of shutter standoff + shutter.

TELESCOPE INTERFACE CONT'D.



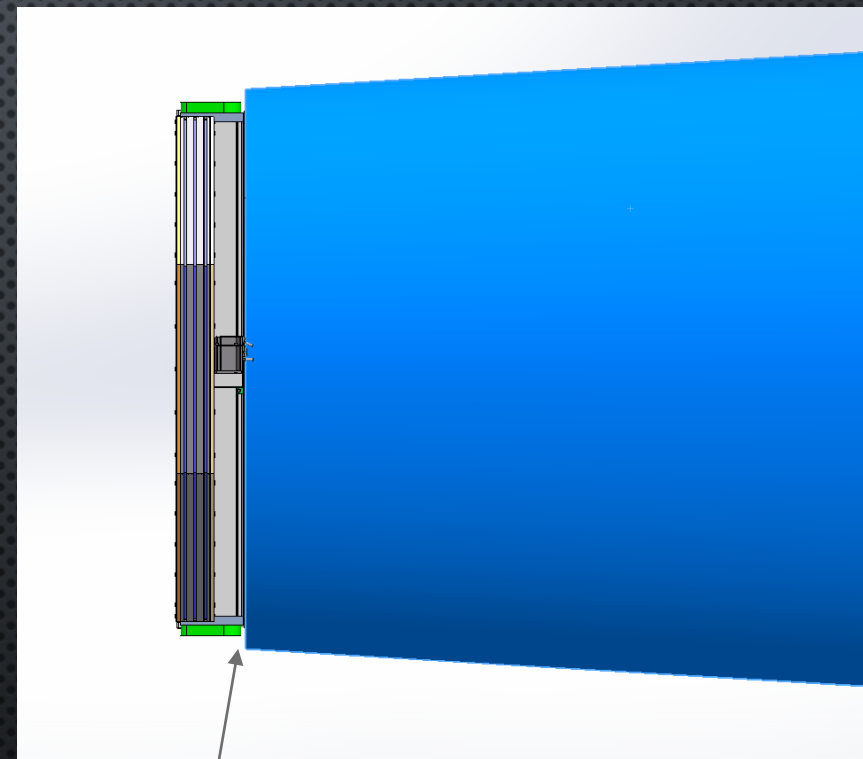
The shutter will be installed after the shutter standoff is installed on the telescope tube flange (as shown) such that all of the bolts are accessible.



TELESCOPE INTERFACE CONT'D.

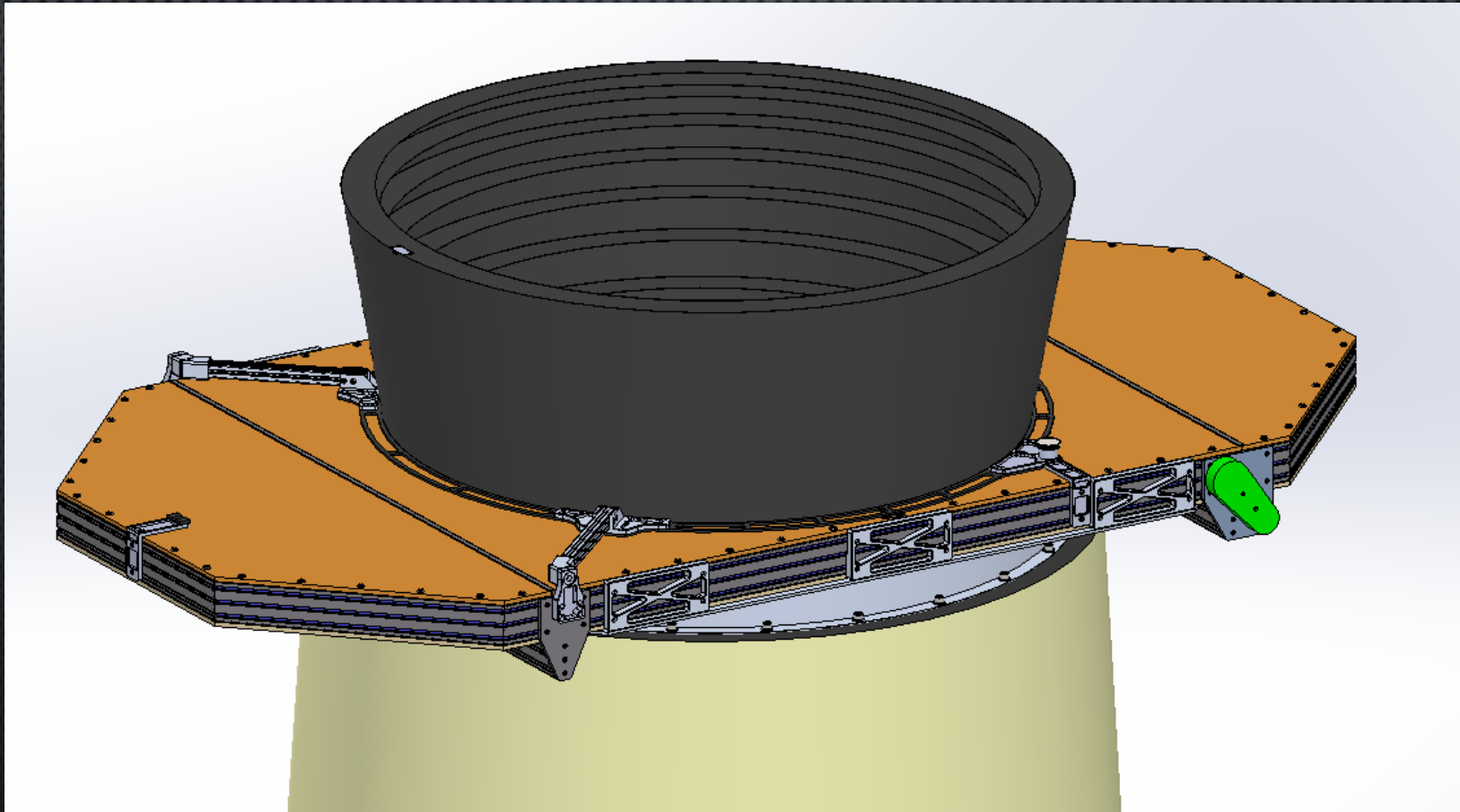


Telescope is shown in nominal stow position, however it can park against cushion stop (indicated with arrows). There are no interference issues with the current design because the shutter is within the outer diameter of the telescope tube.



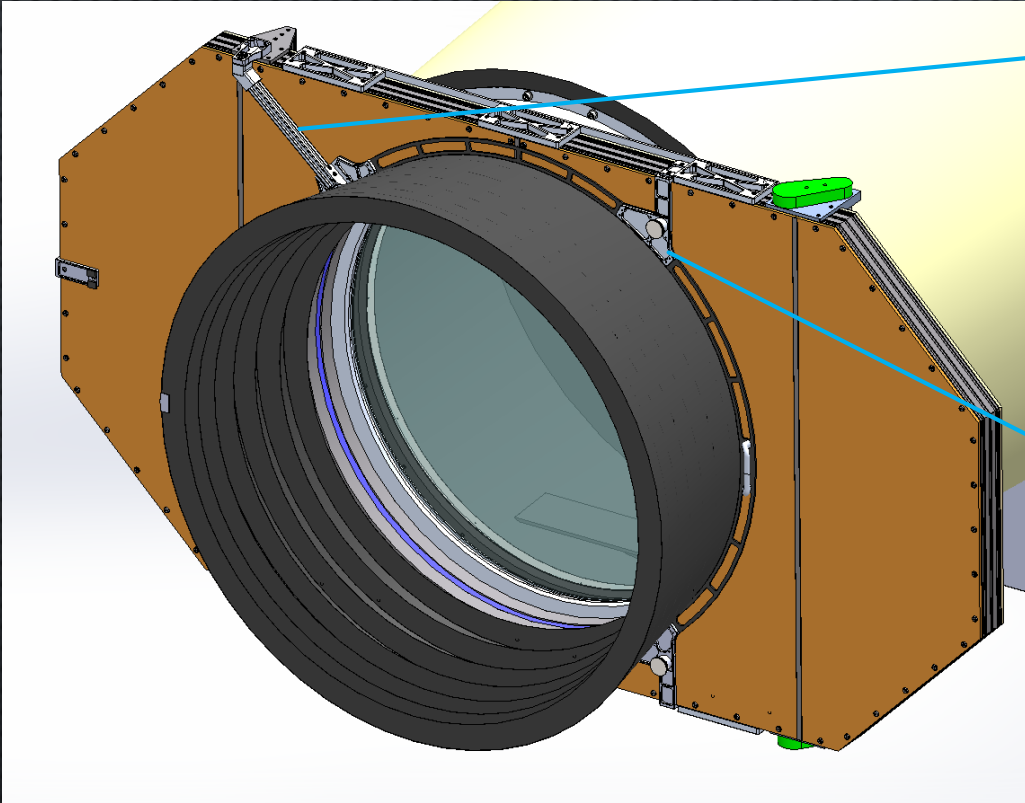
But yes...it is indeed a tight fit.

BAFFLE INTERFACE

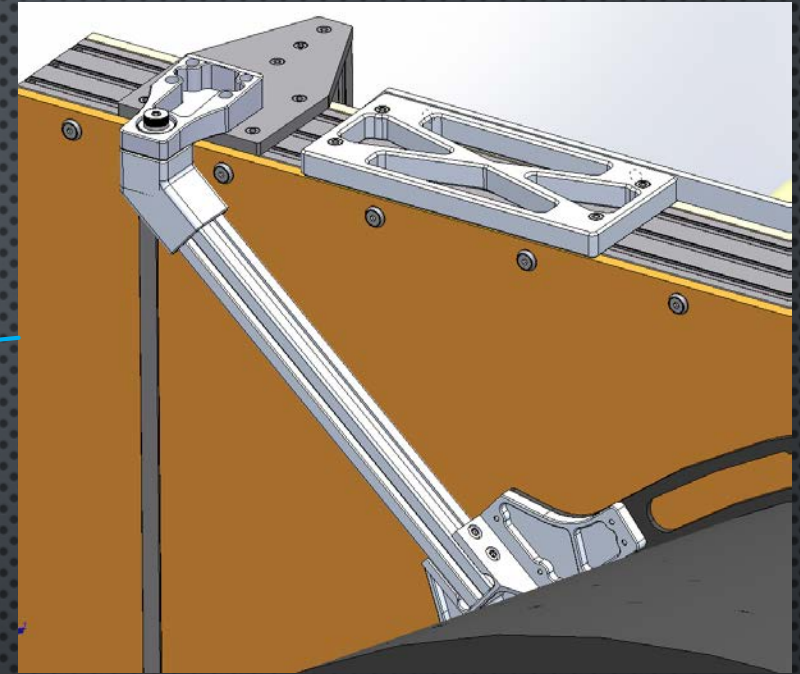


A baffle will be installed on the front of the shutter to mitigate stray light. The baffle will be comprised of lightweight composite sheets which will not cause excessive loading on the shutter leaf covers.

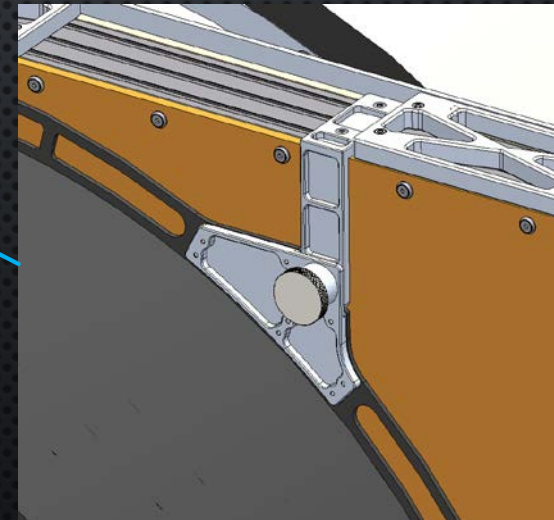
BAFFLE INTERFACE CONT'D.



Given the maintenance requirements (cleaning of the trim plate), the baffle will be on a hinge system such that technicians can access the optic with ease.

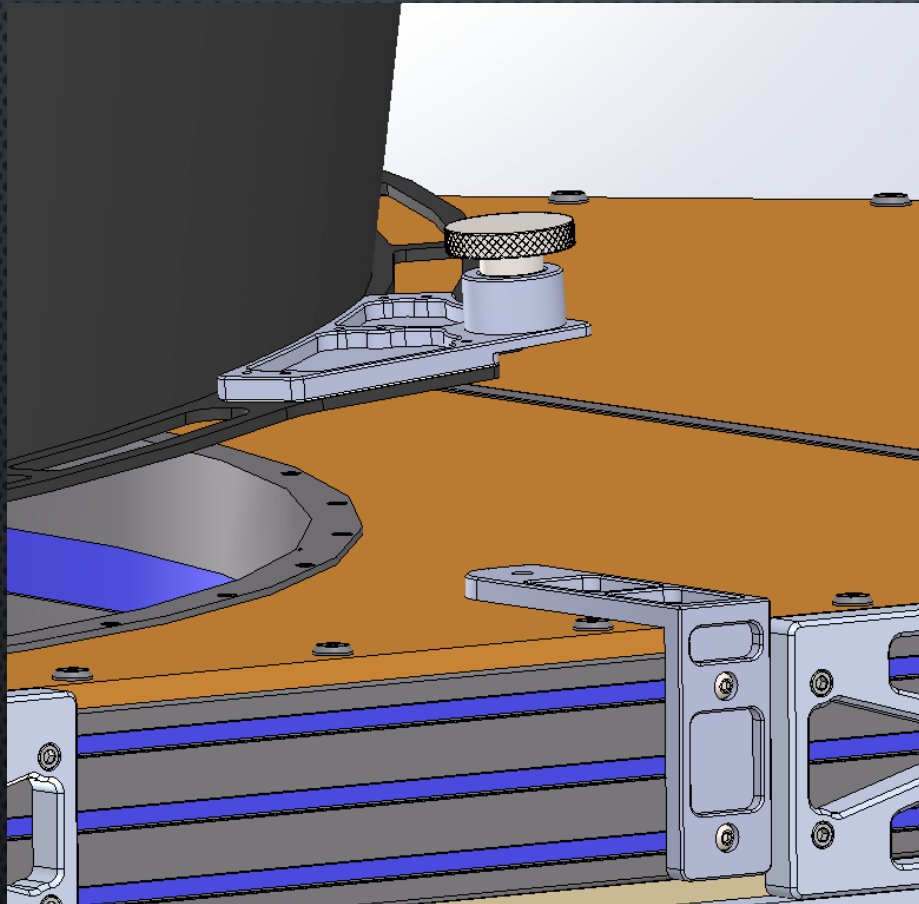


Upper pivot arm (lower pivot arm not shown).

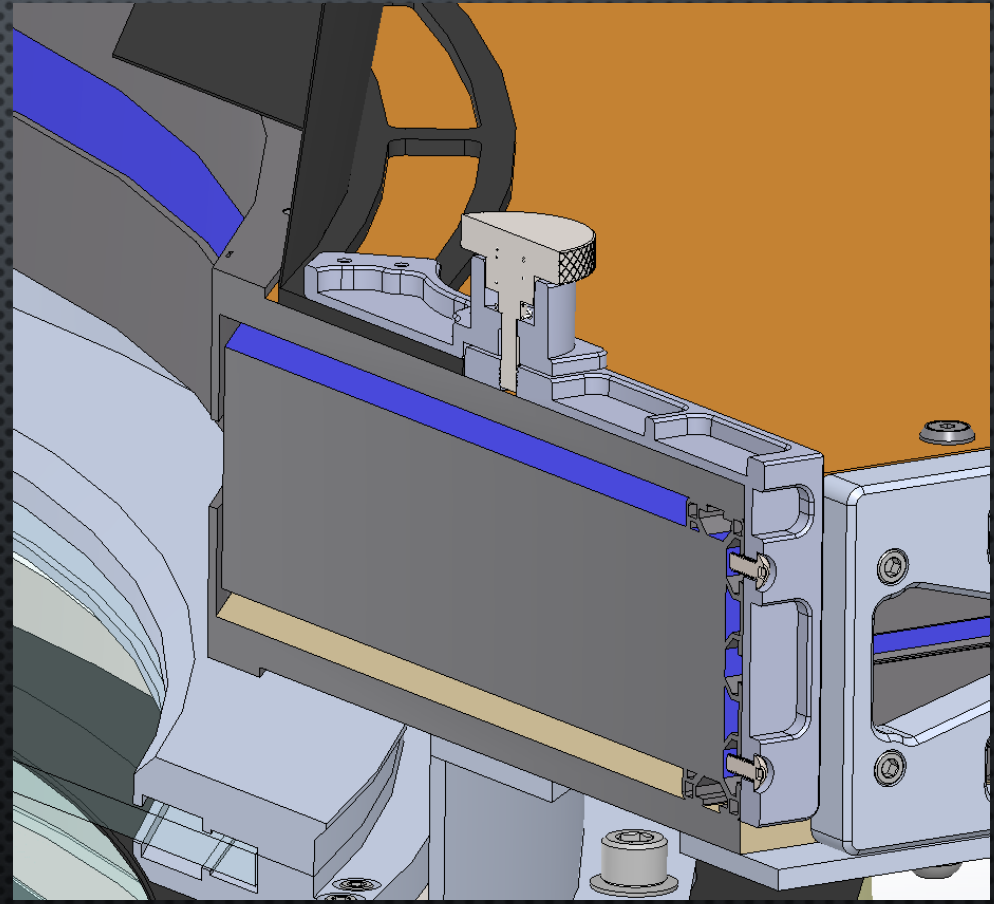


Upper locking thumb screw (lower thumb screw not shown)

BAFFLE INTERFACE CONT'D.

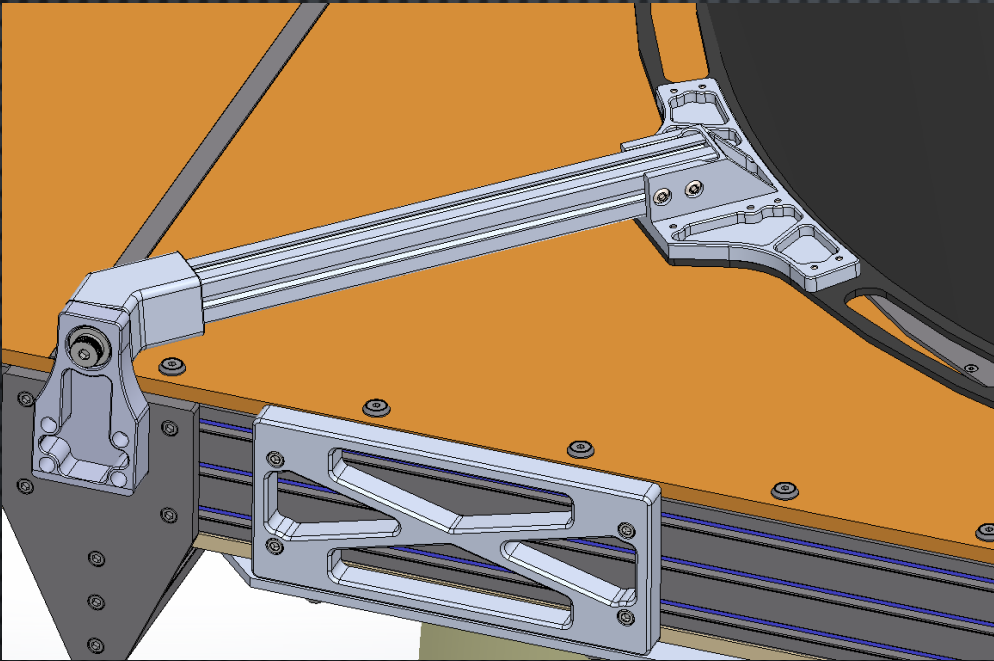


Baffle partially opened. Thumb screw is forced up with a spring so that the threads will not bind.

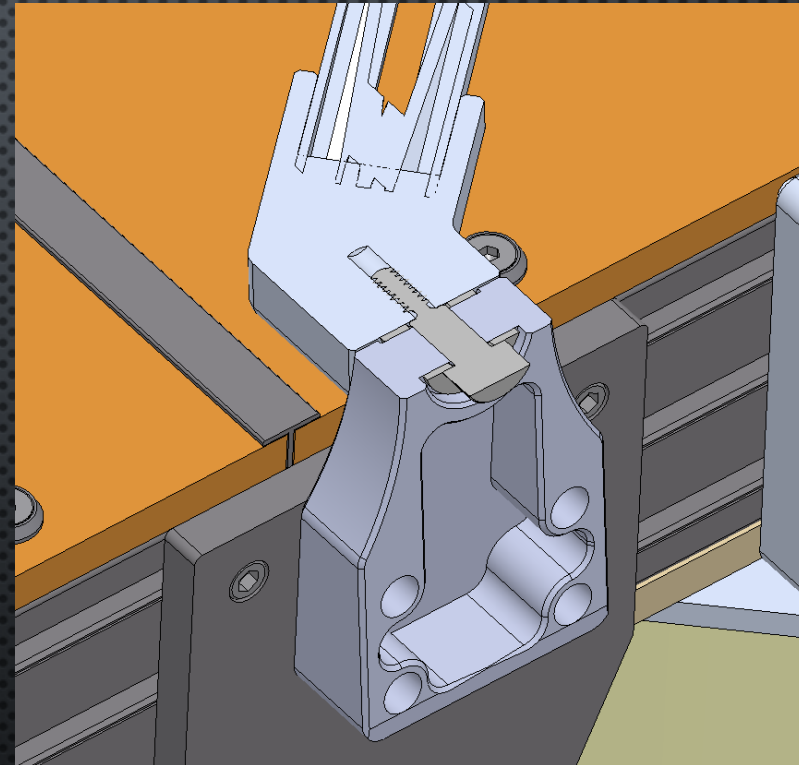


Baffle in locked position (spring compressed and thread engaged).

BAFFLE INTERFACE CONT'D.

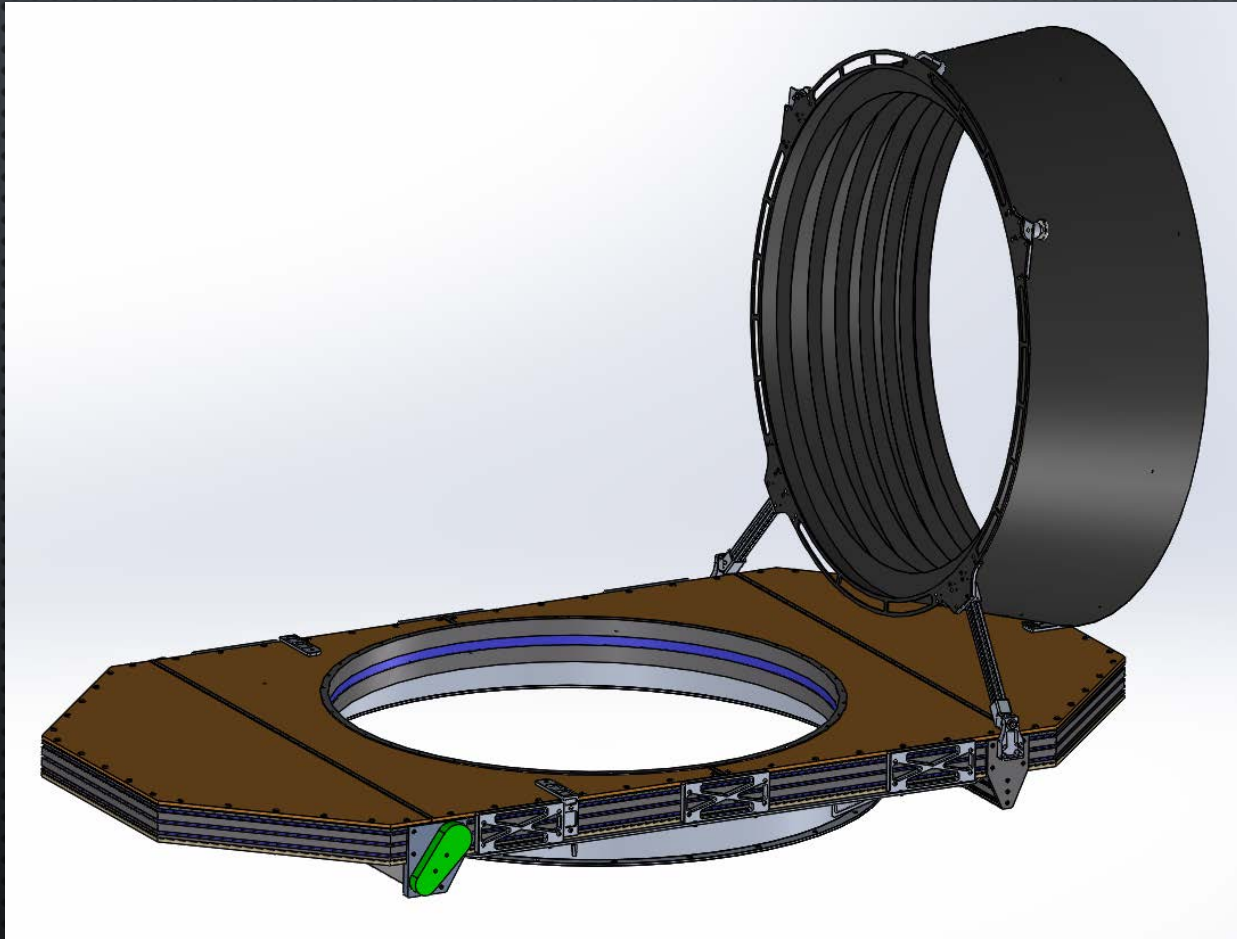


Pivot arm is comprised of a Misumi extrusion and 3X machined brackets. The arm interfaces to baffle and Bonn Shutter bracket. Request 4X tapped holes on this bracket.



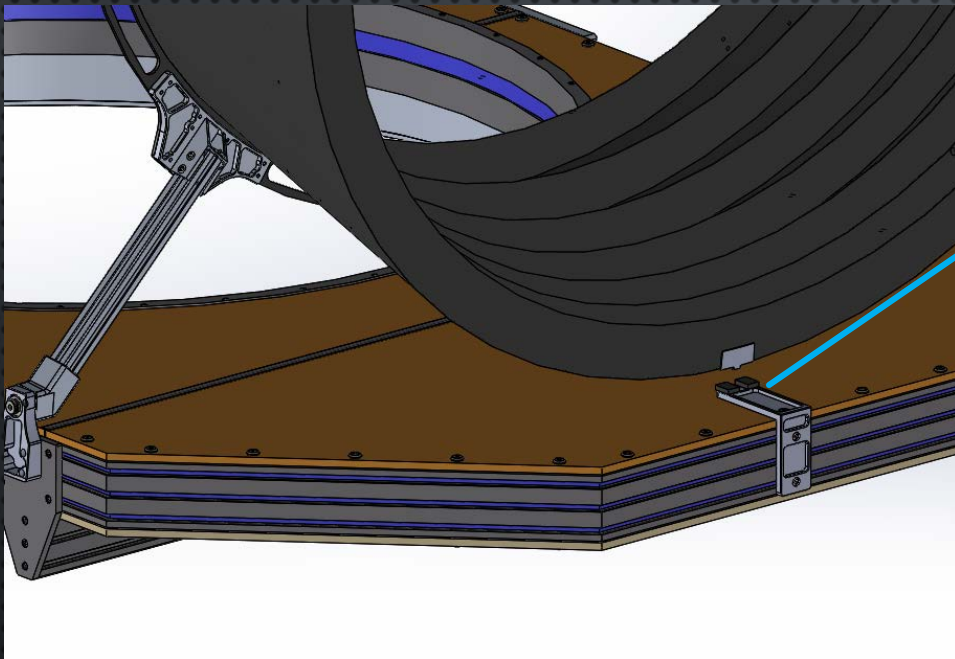
Shoulder screw provides axis of rotation. 2X thrust washers protect rubbing surfaces.

BAFFLE INTERFACE CONT'D.

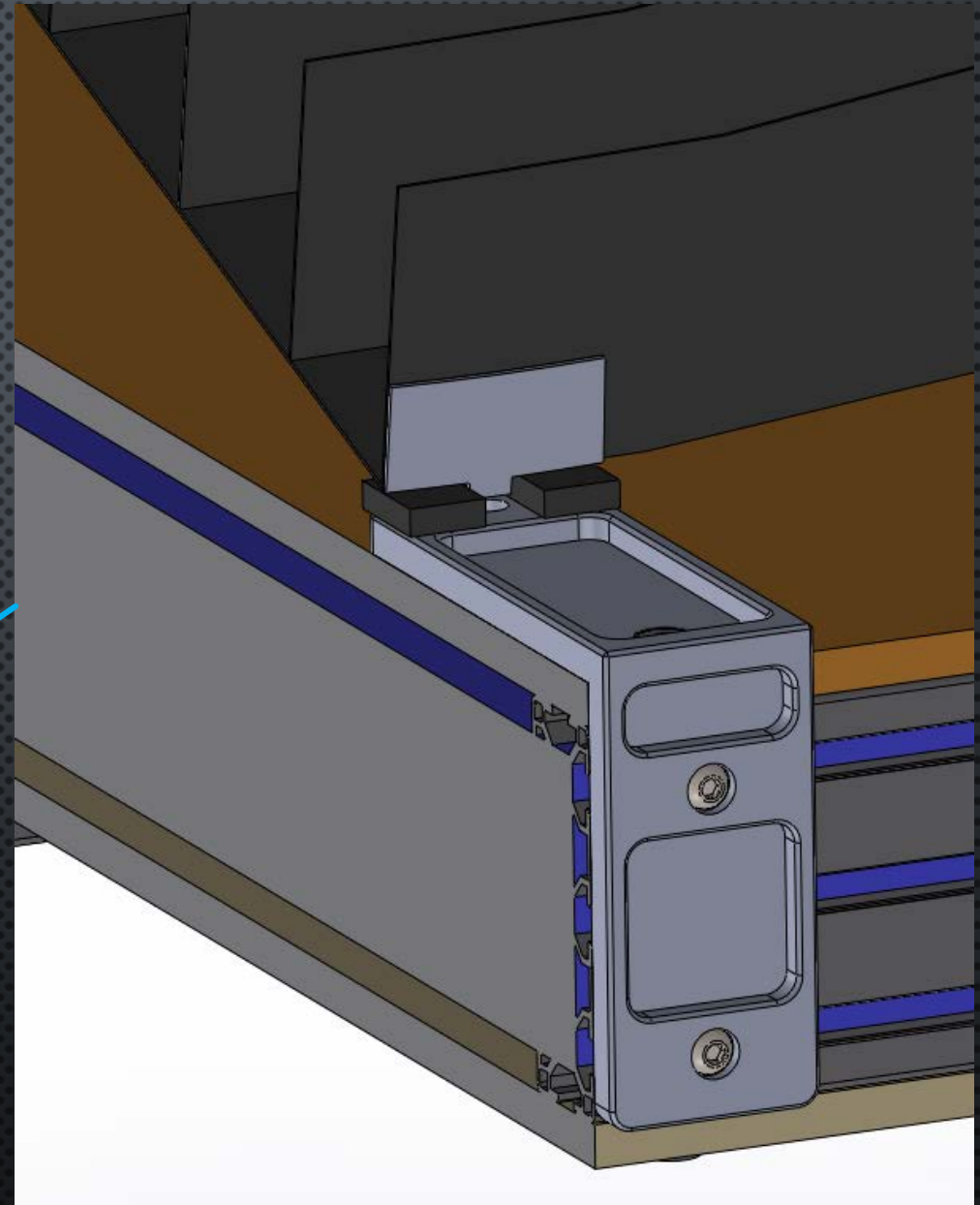


Baffle shown in open position

BAFFLE INTERFACE COTN'D.

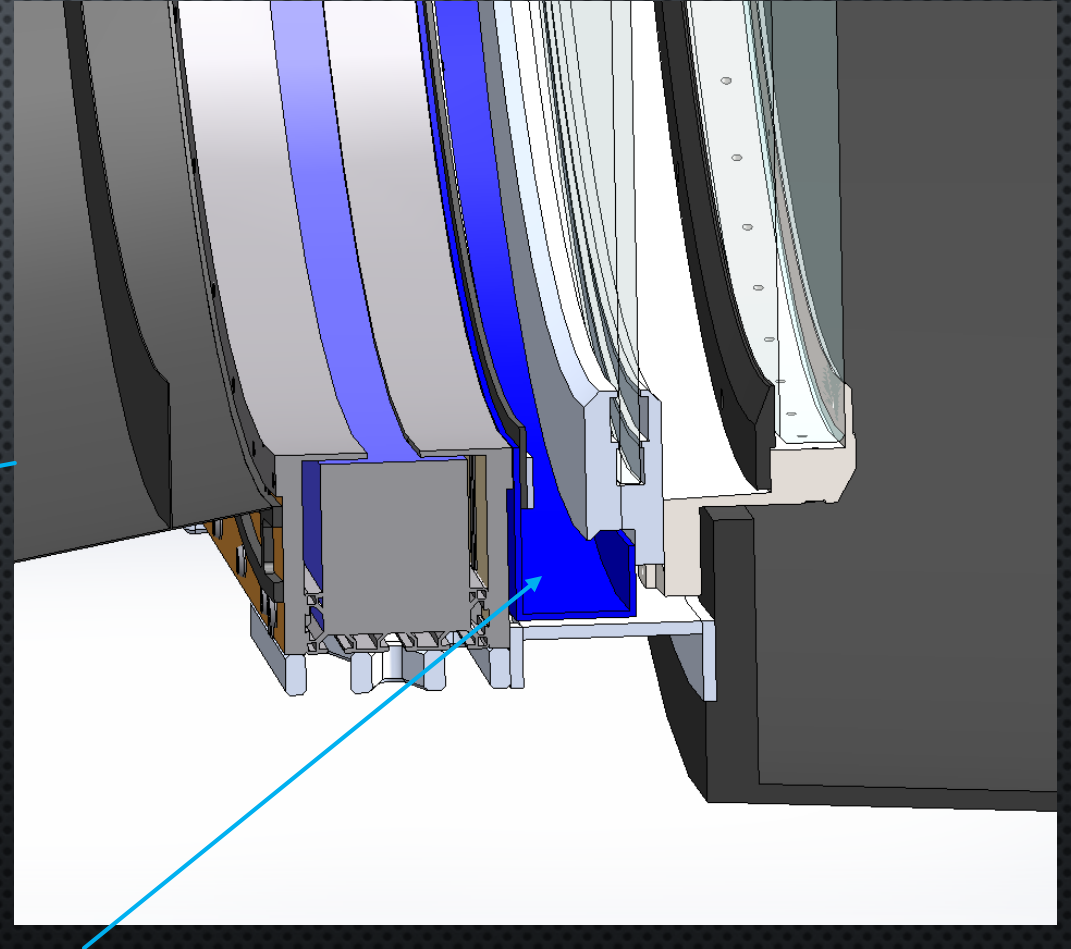
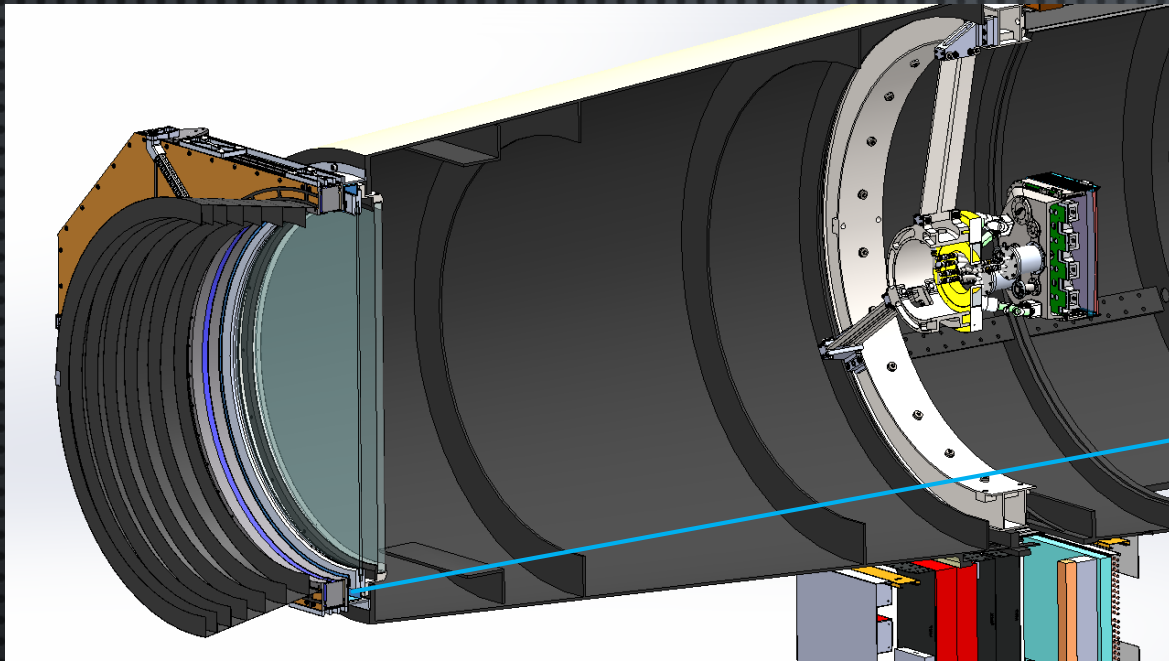


Baffle opening and engaging rubber cushions with a magnetic catch.



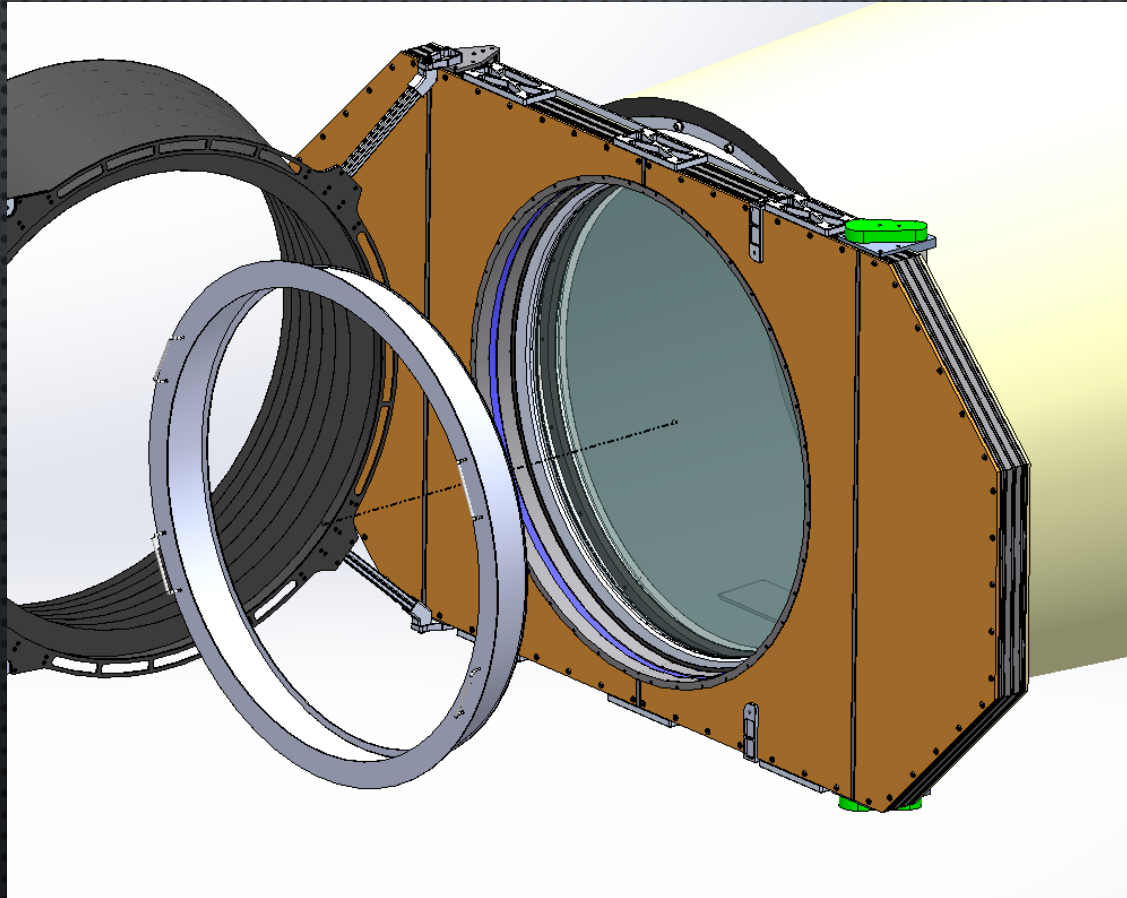
Ferritic bracket bonded to baffle engages against rubber cushions and magnet.

LIQUID PROTECTION SYSTEM



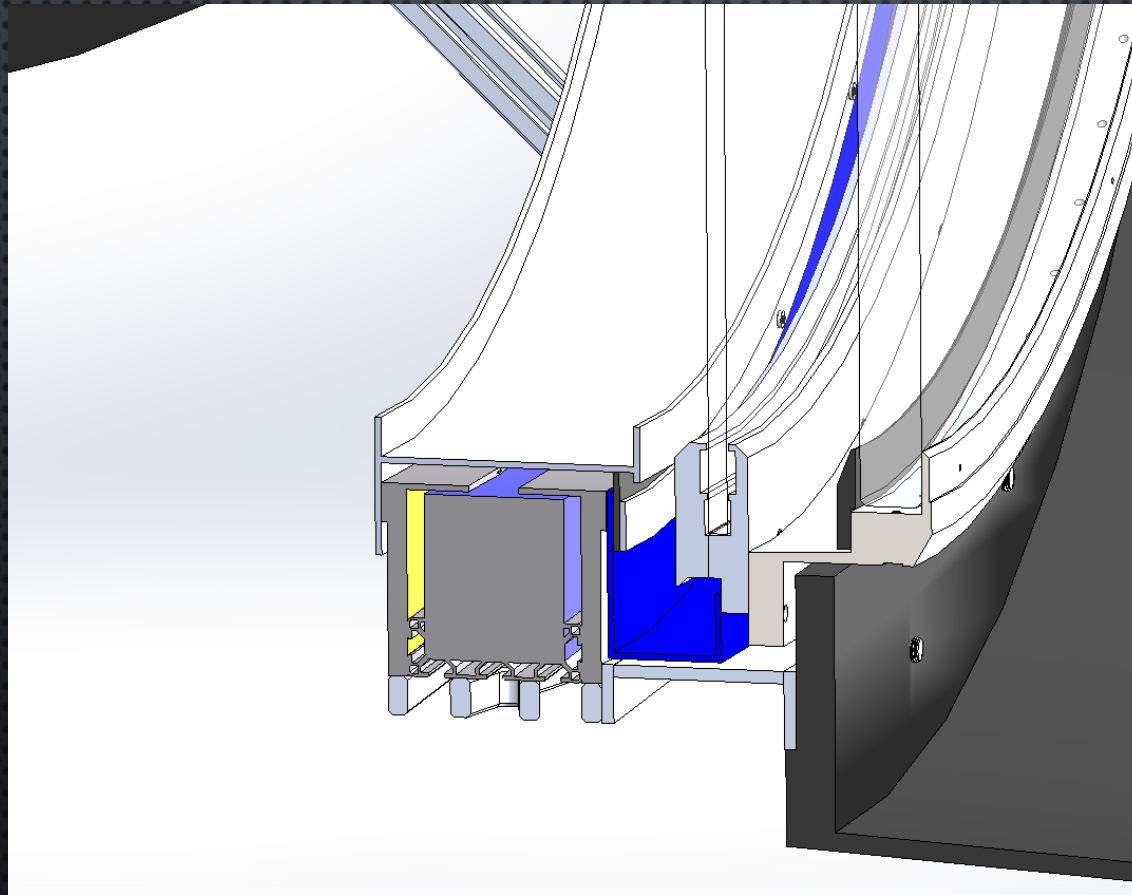
Plastic gutter sandwiches between trim plate cell and shutter.

LIQUID PROTECTION SYSTEM CONT'D.



Baffle pivots out of the way and technician inserts shutter rain guard.

LIQUID PROTECTION SYSTEM CONT'D.



Shutter rain guard slips over rubber flange to protect the open slits of the shutter.