Eigenlabs DevCon 2012

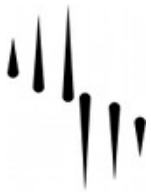
What am I going to talk about?

- Software:
  - What constitutes a moral EigenD Agent
  - If you write one, what will Eigenlabs do about it or with it?
- The Eigenharps
  - The hardware engineering
- Future developments in Eigenland

The 'Moral Agent'

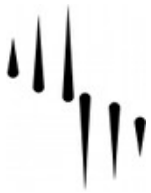
What we **don't** care about.

- We don't care how you write it
- We don't care what noise it makes
- We don't care what it does



What we really do care about

- Don't break Belcanto – we have plans for this in the future. This means:
  - Every action on an Agent should be possible from Belcanto.
  - GUI's in general are hard as a result
  - If we're right, the effort will be worthwhile.
  - If you disagree that's OK, we just won't be very interested
  - This is probably the single most awkward thing in finishing an Agent



What we really care about II

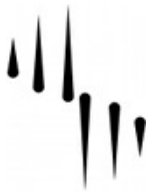
- MIDI is a disaster in our world
- Please don't let MIDI centric thinking bleed into your Agents, it's a pervasive ill
- Good event handling is hard but worth it, it's the heart of expressive music software

What we really care about III

- Some of the greatest musical creative moments come from acts of abuse
- Let the musician abuse your code
- Really. If there's a decision to make, let them make it. Restrain your inner fascist. Let them break it.
- This is also hard. Sometimes really hard!
- Don't crash.

What we really care about IV

- Musicians aren't programmers
- They don't think like programmers
- I'm a programmer and when I play I don't think like a programmer either
- Remember the three stages of music –
  - Private rehearsal – GUI's are cool, fiddly is OK
  - Public rehearsal – GUI's are OK, fiddly is bad
  - Performance – GUI's are the dullest thing on the planet



Please - Keep It Friendly. Not simple, not dumb, just friendly.

If you write an indestructible, abuse tolerant, fantastic, world class tea making Agent, what next?

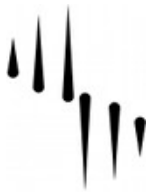
Distributing Agents

- If you've signed a Contributor Agreement and are releasing under GPL then we'll probably put it into the core source tree of EigenD
- You can now distribute it or sell it as a binary as well, we've tried to make this as easy as possible
- If there starts to be interesting activity in this area, we'll start a Marketplace for Agents – we're happy to support mixed licensing models in this too.

Distributing Agents

- We're going to add a 'credits' section to EigenD shortly. If you contribute significantly we'll be very pleased to add you in there.

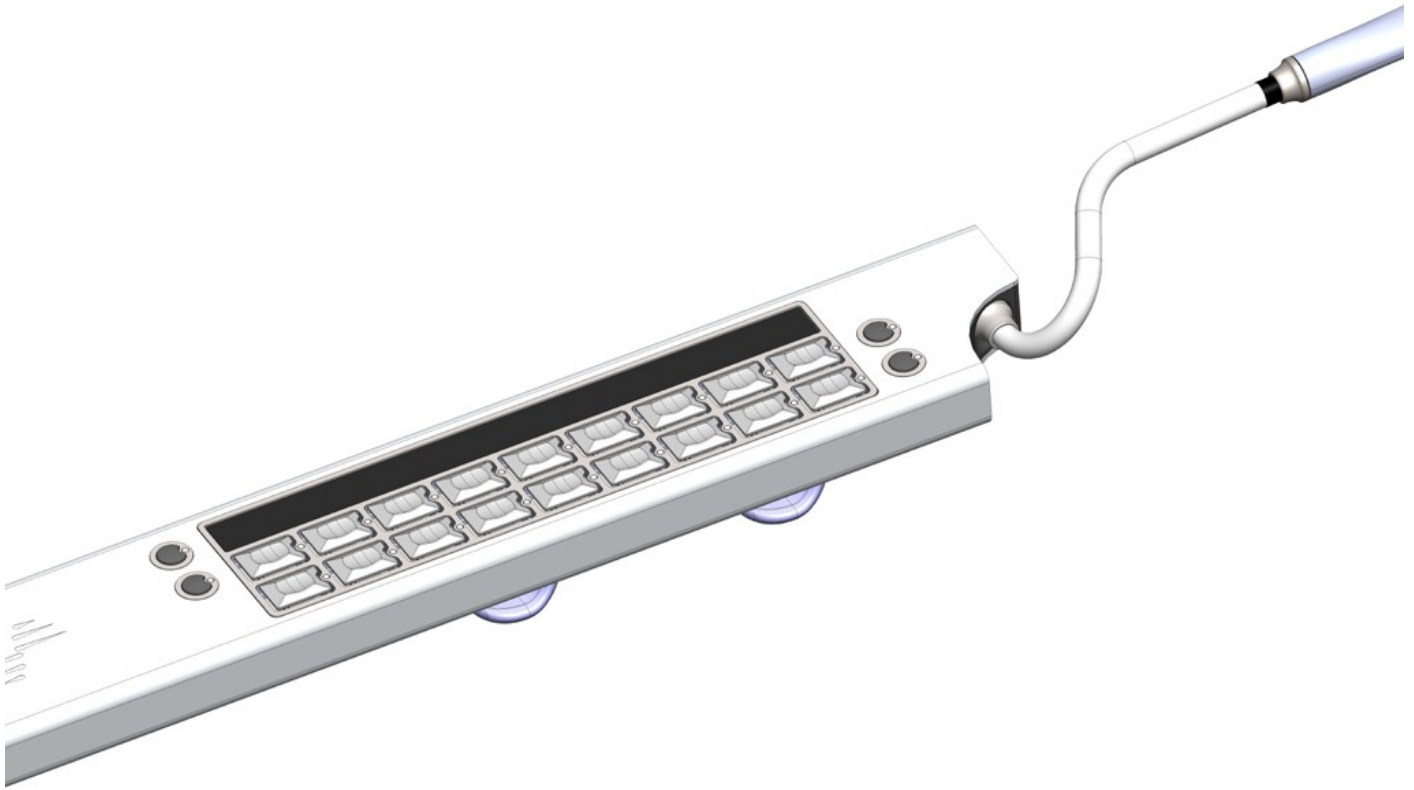
The Eigenkey – how it works

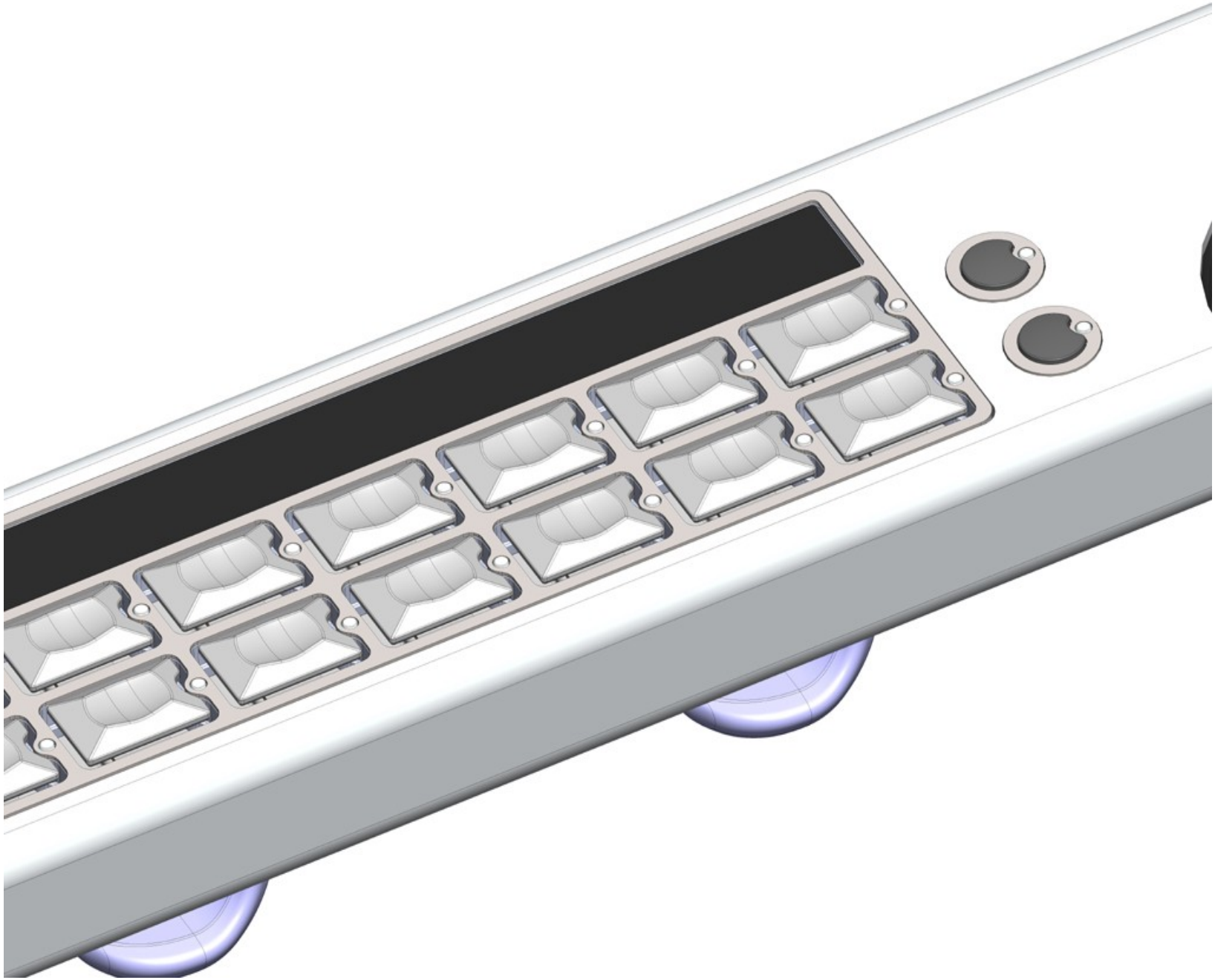


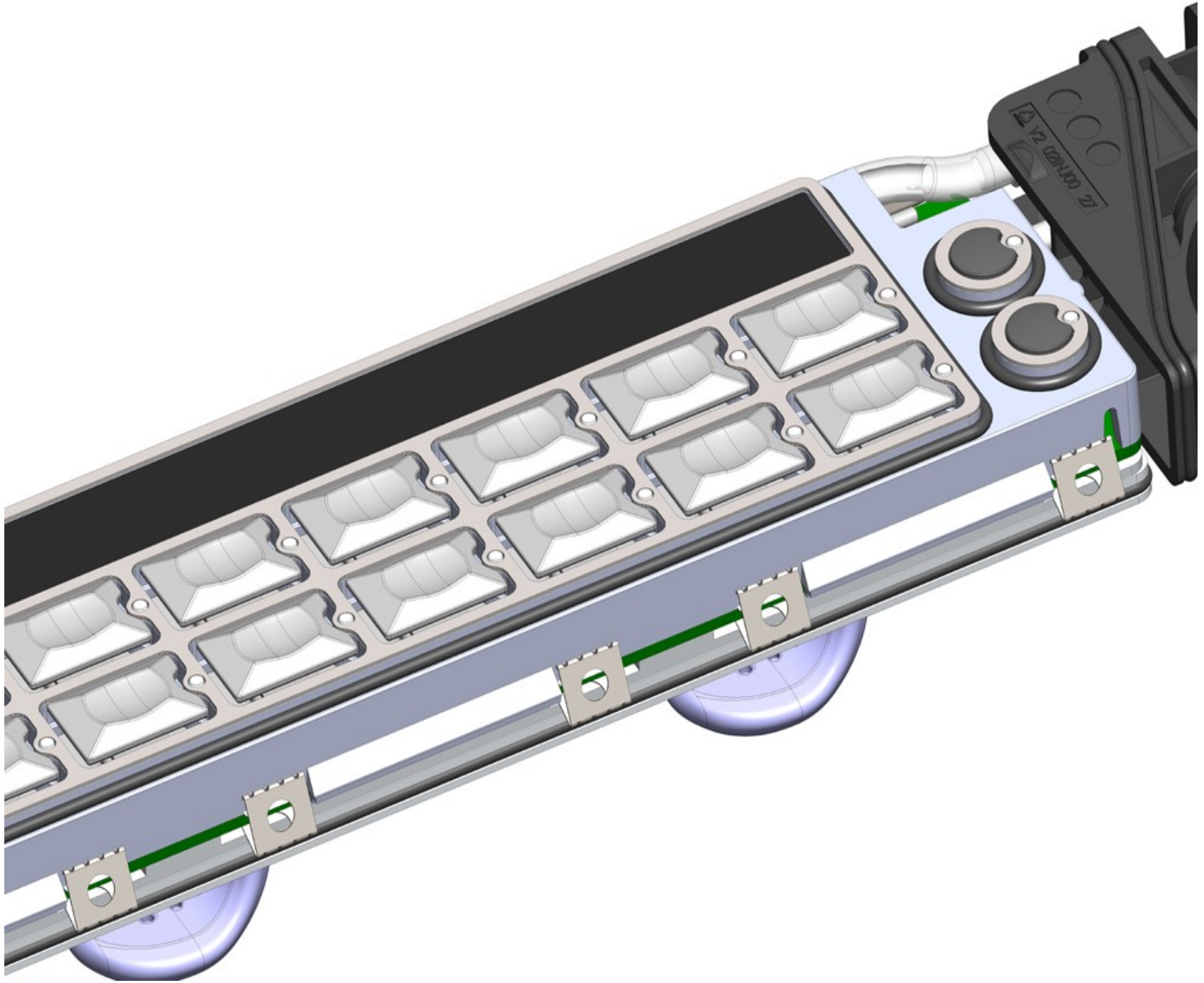
The 3D Eigenkeys

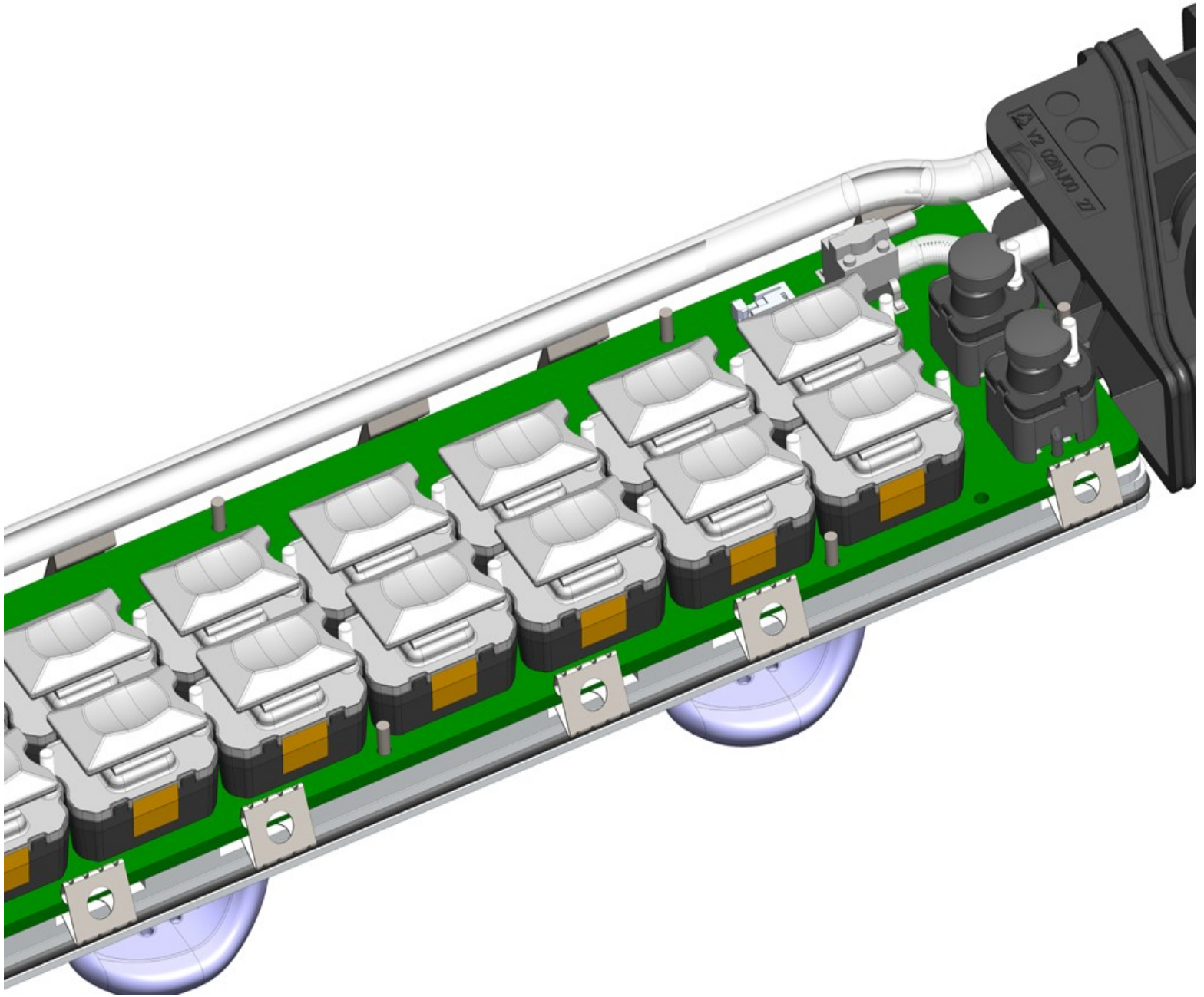
- Astonishing sensitivity, better than a micron of resolution
- Fast, read every 500uS
- Tough, tested out to over a million full cycles of fatigue life
- We have not had one field failure of an Eigenkey in 2 years

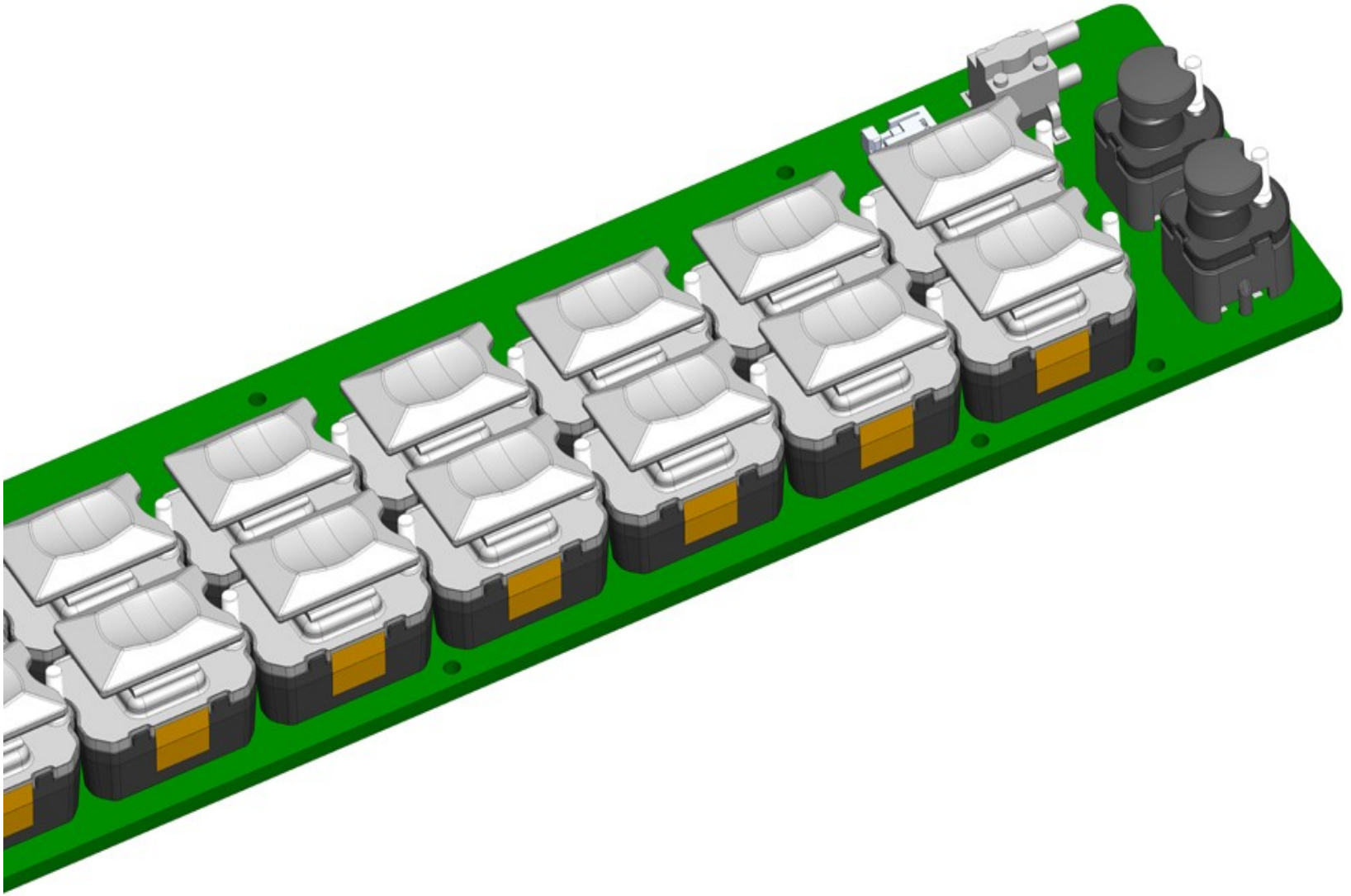
Taking apart an Eigenharp Pico

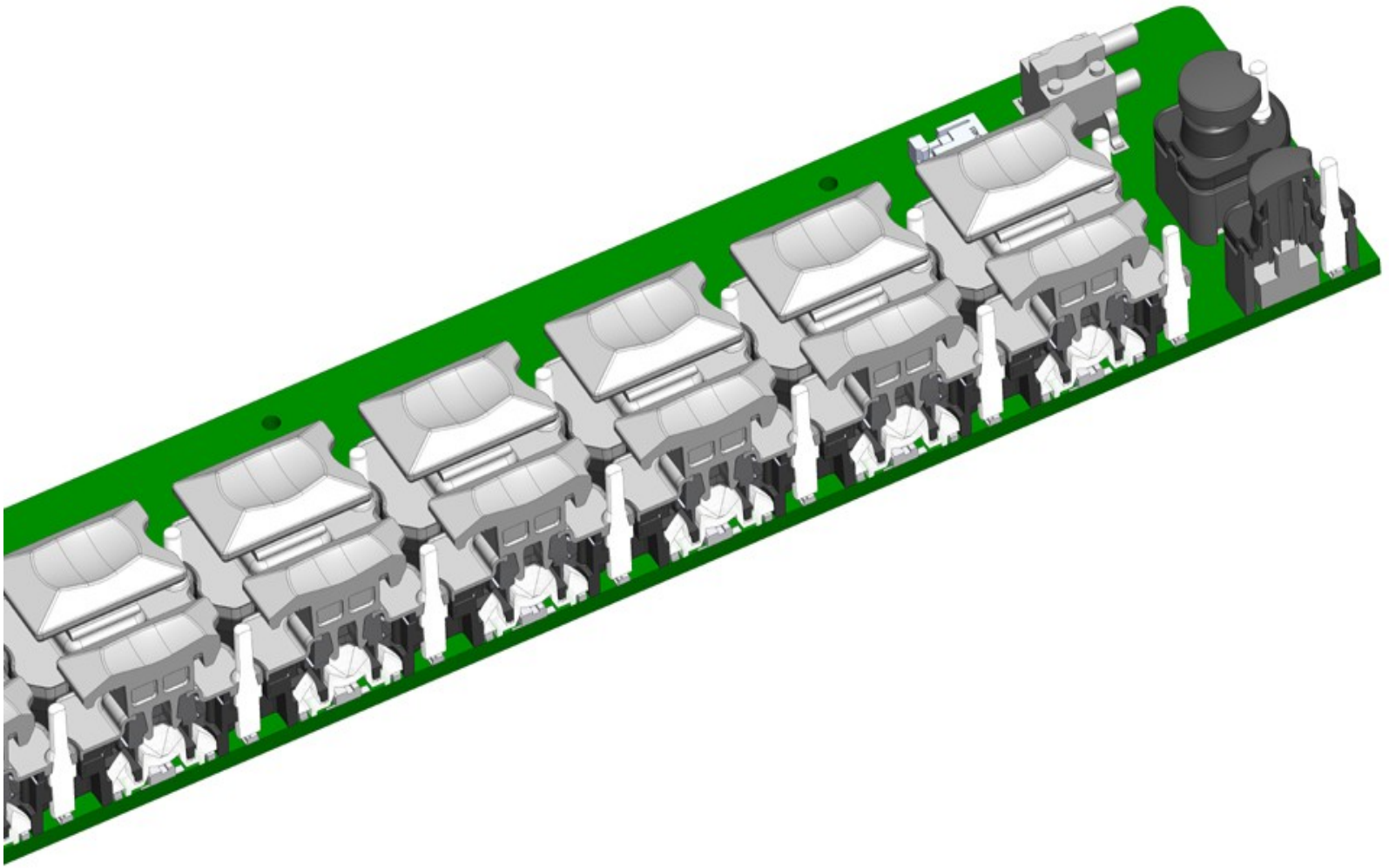


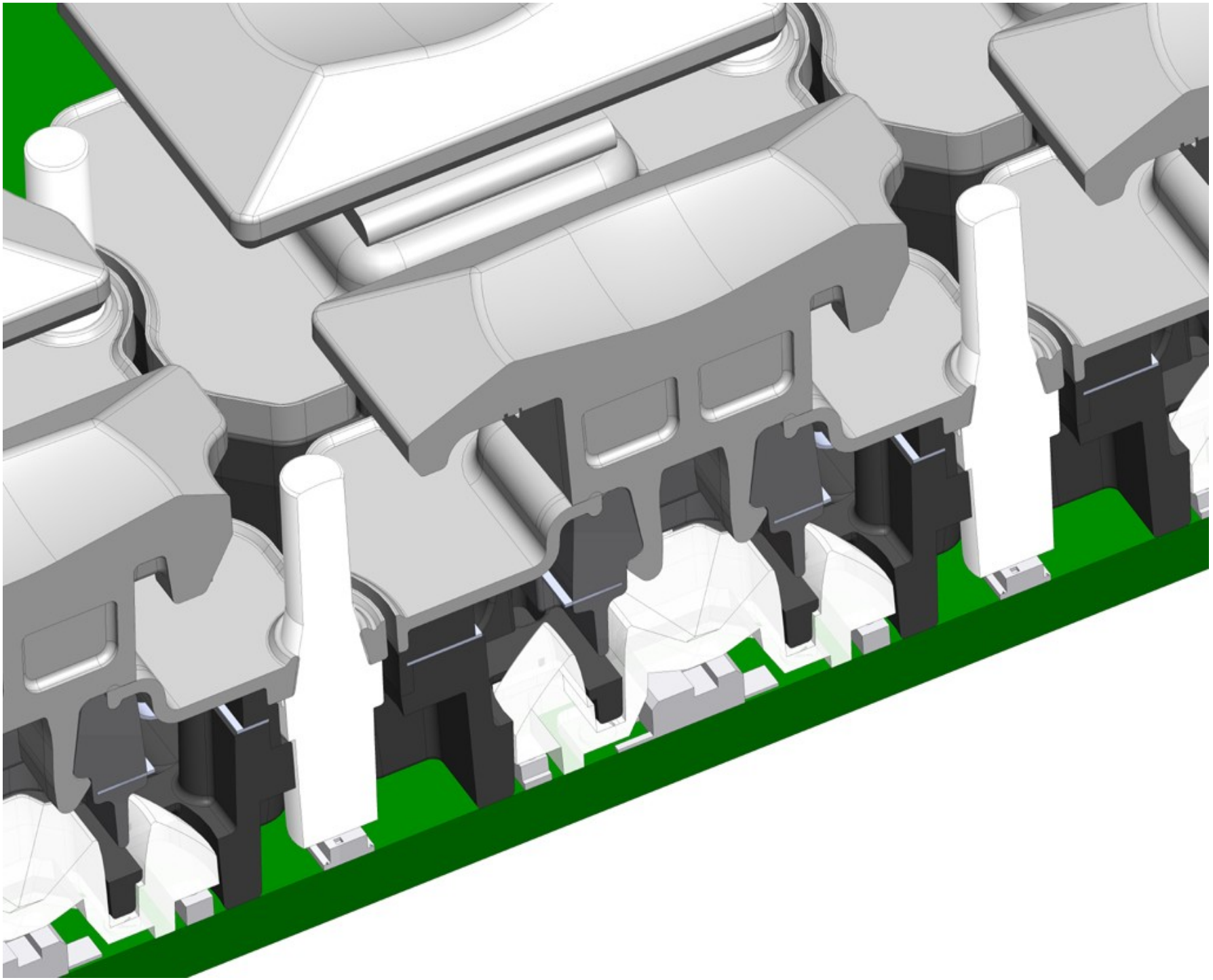


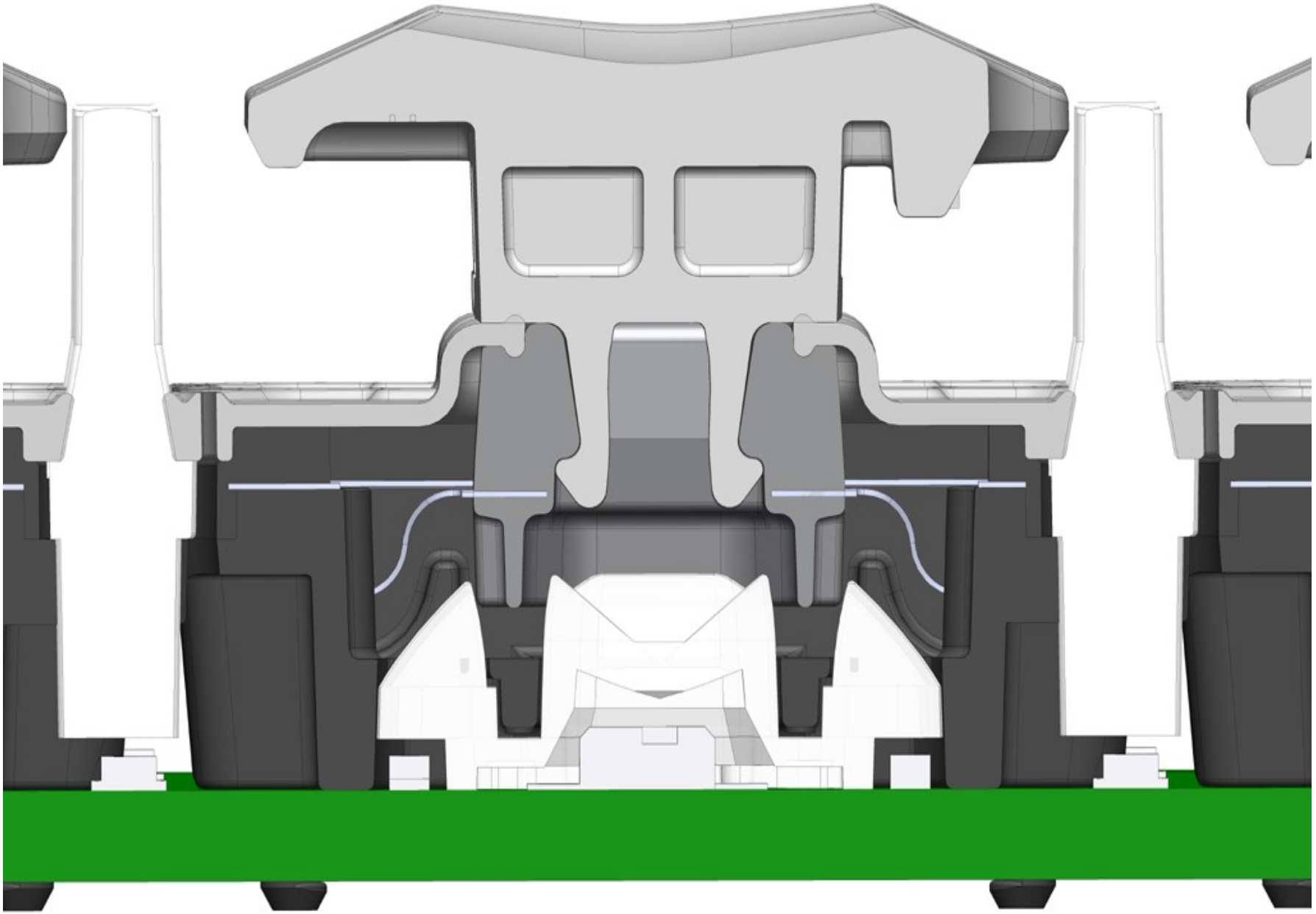


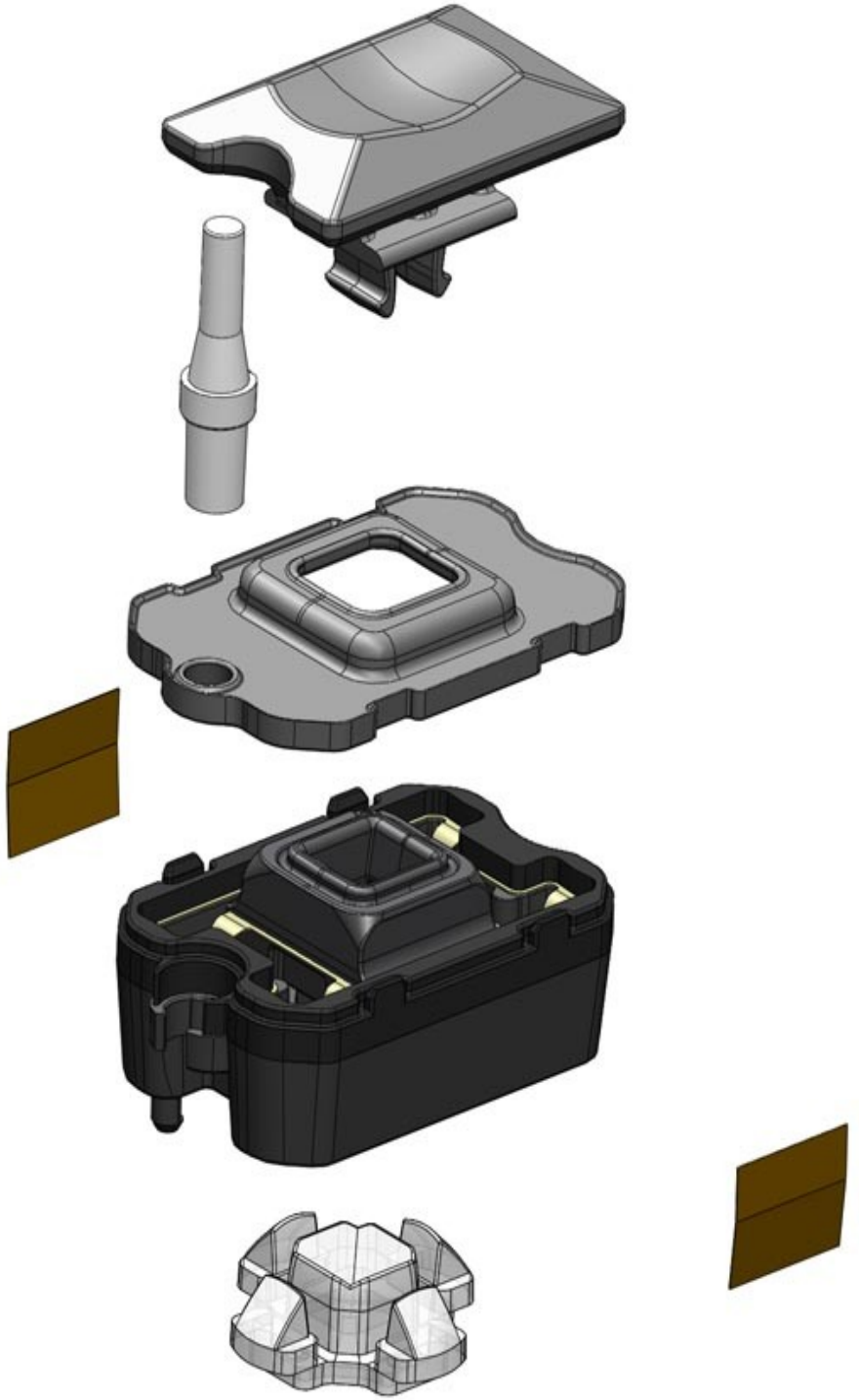


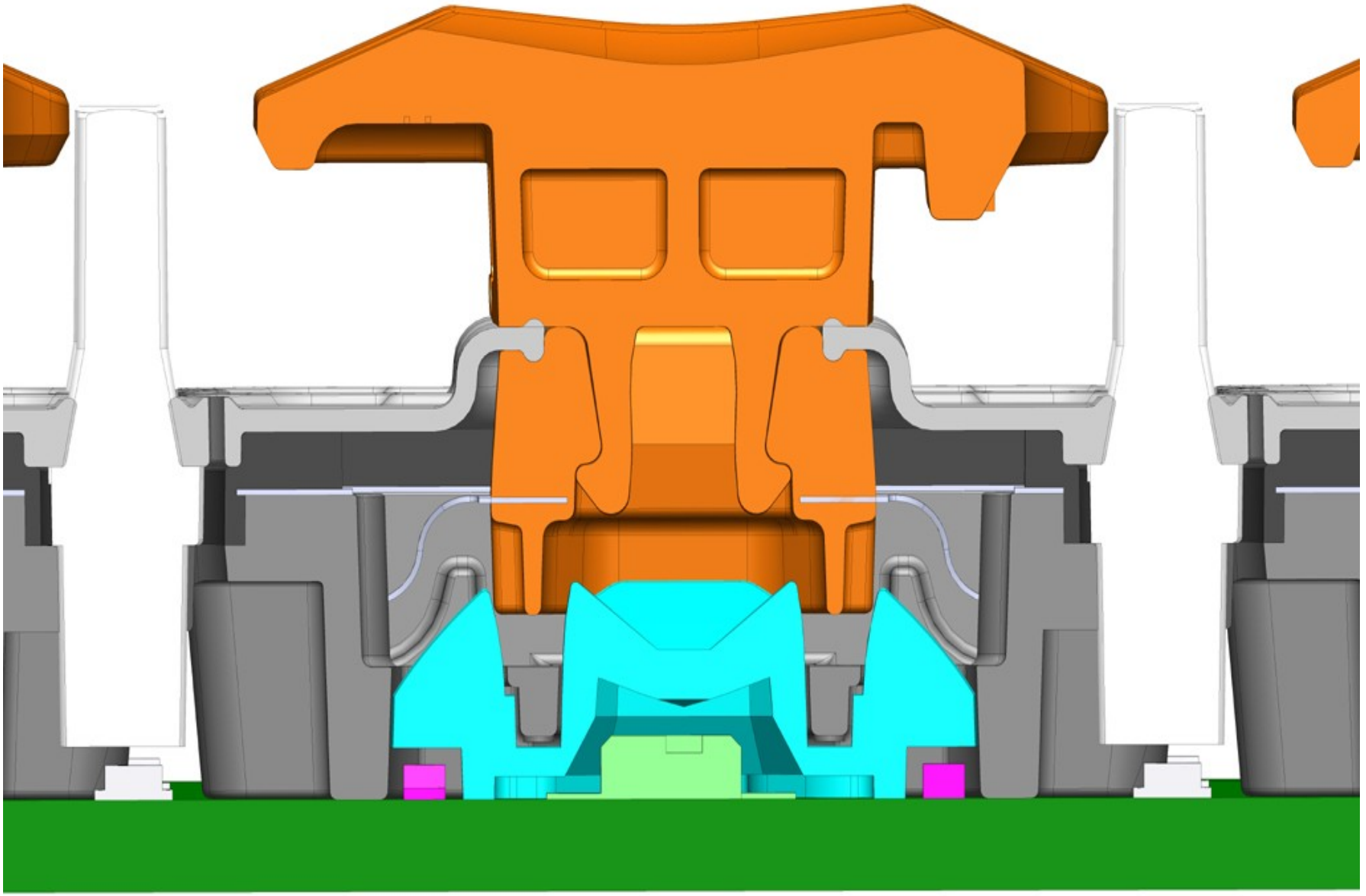


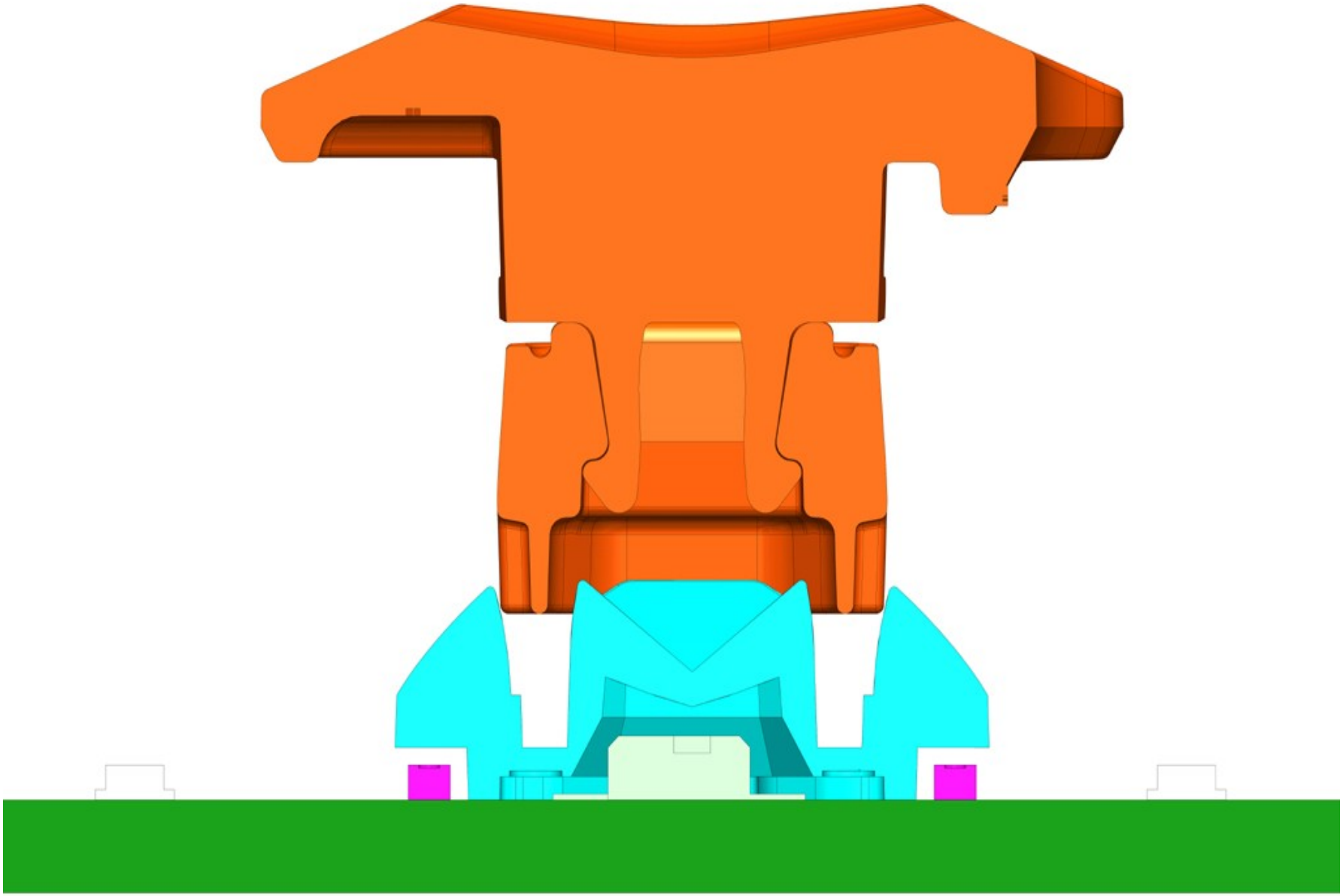


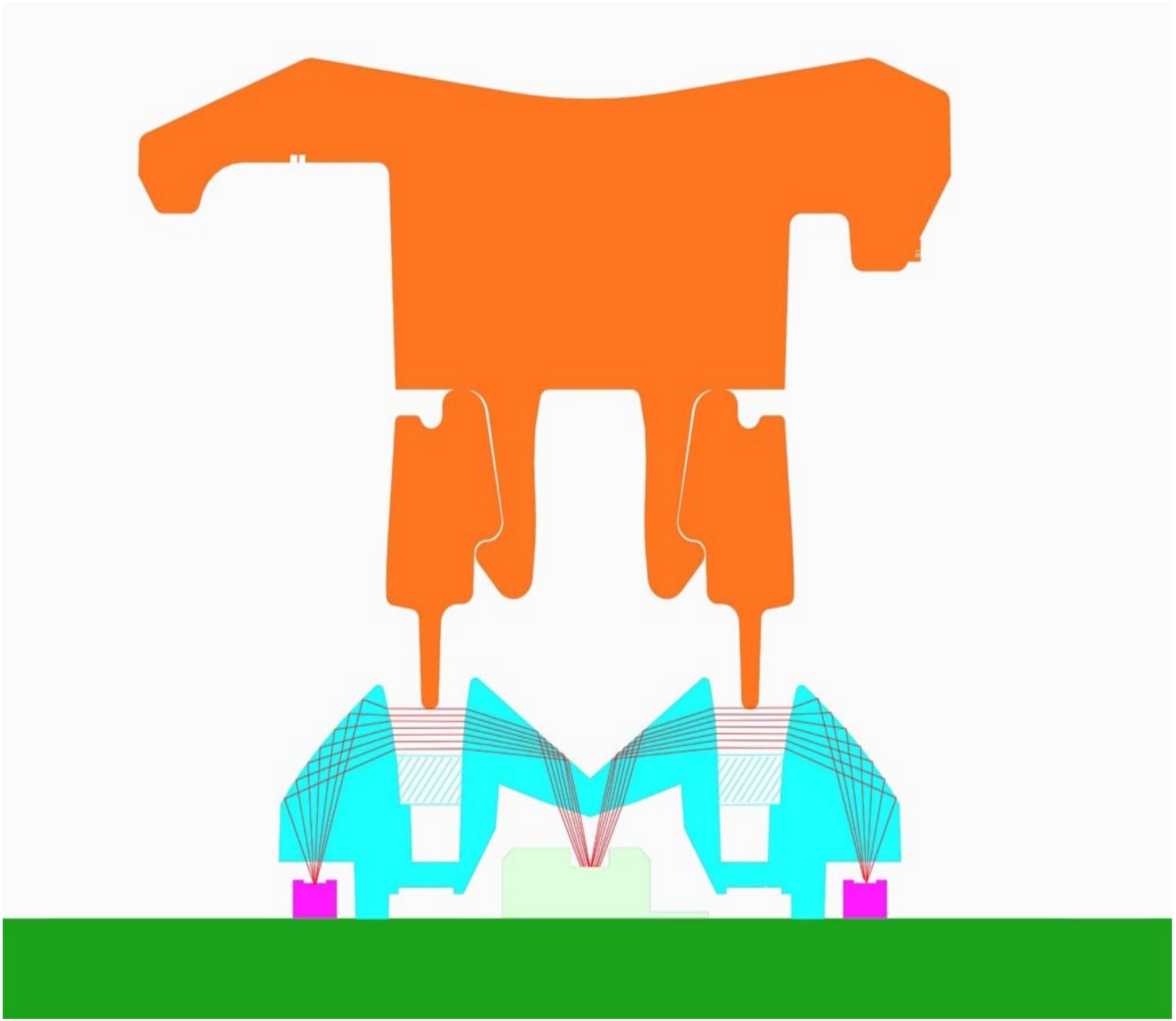


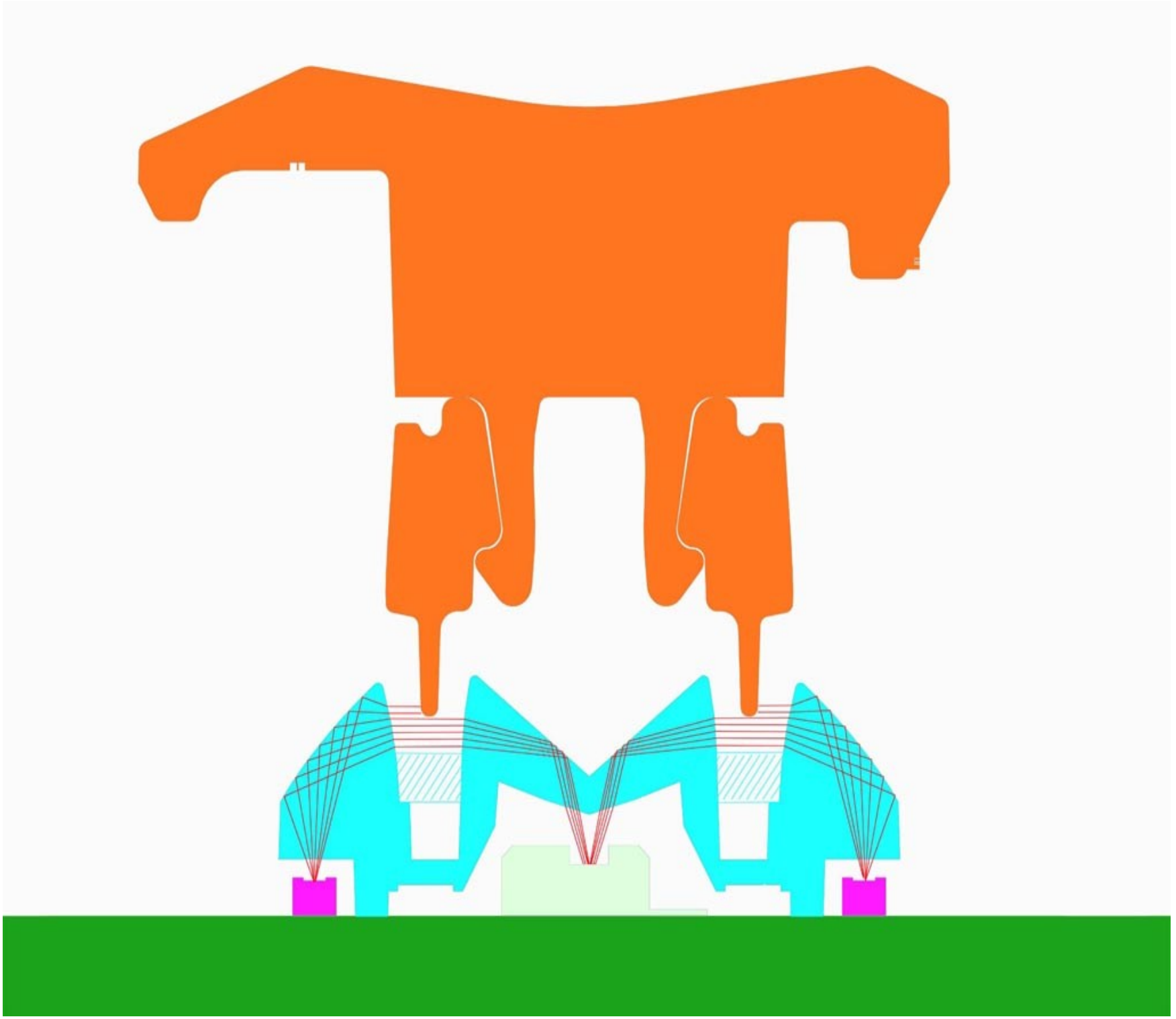


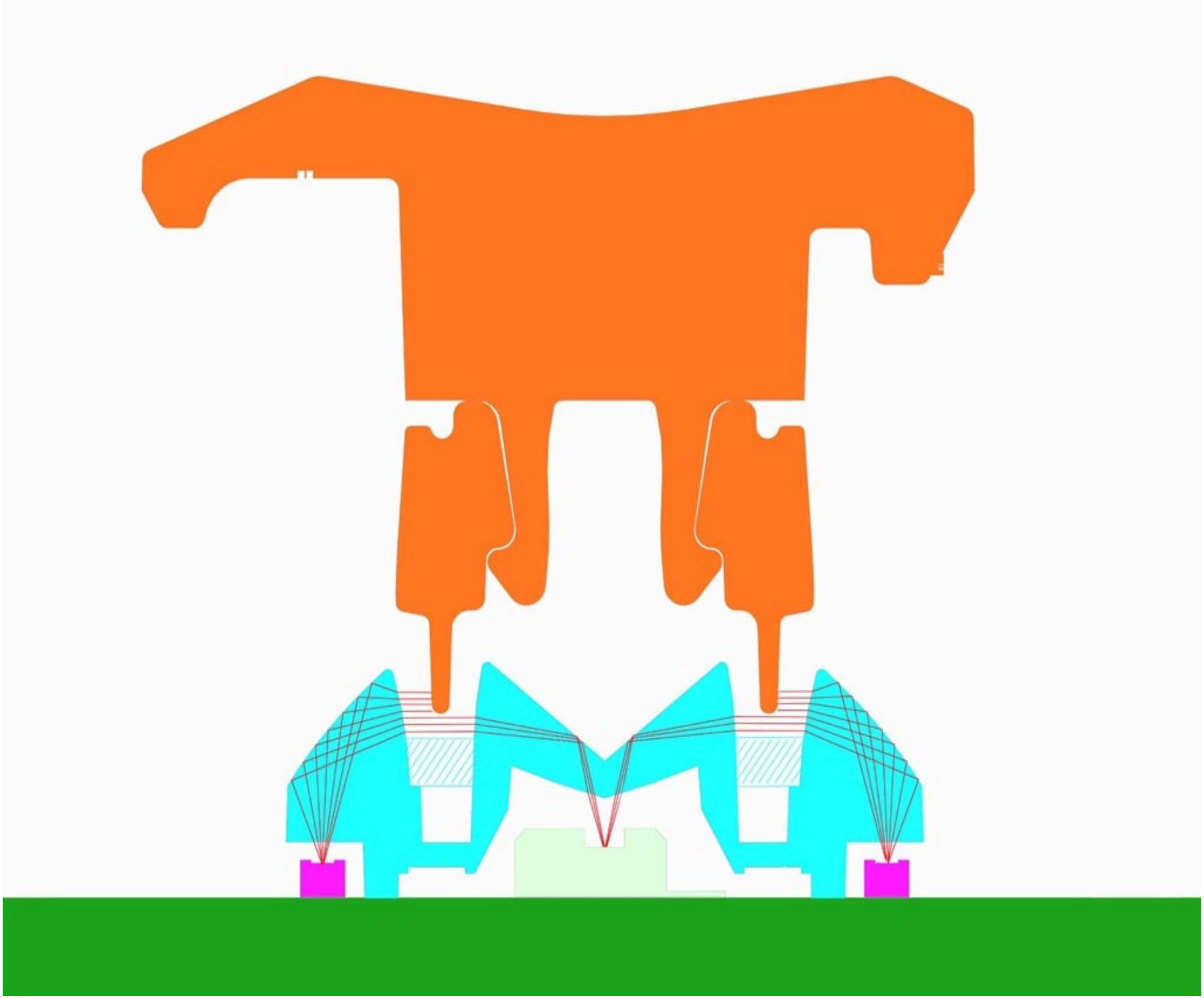


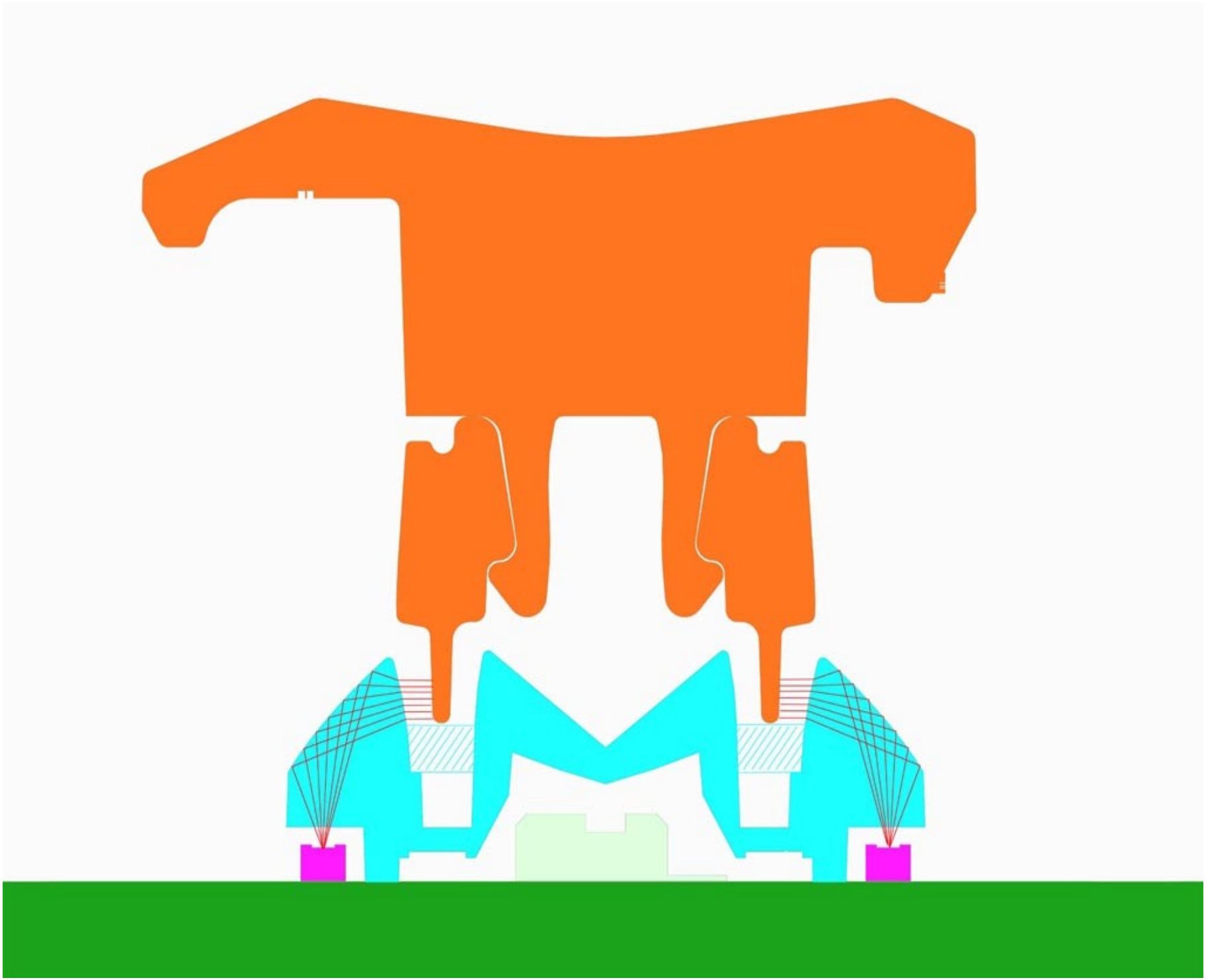


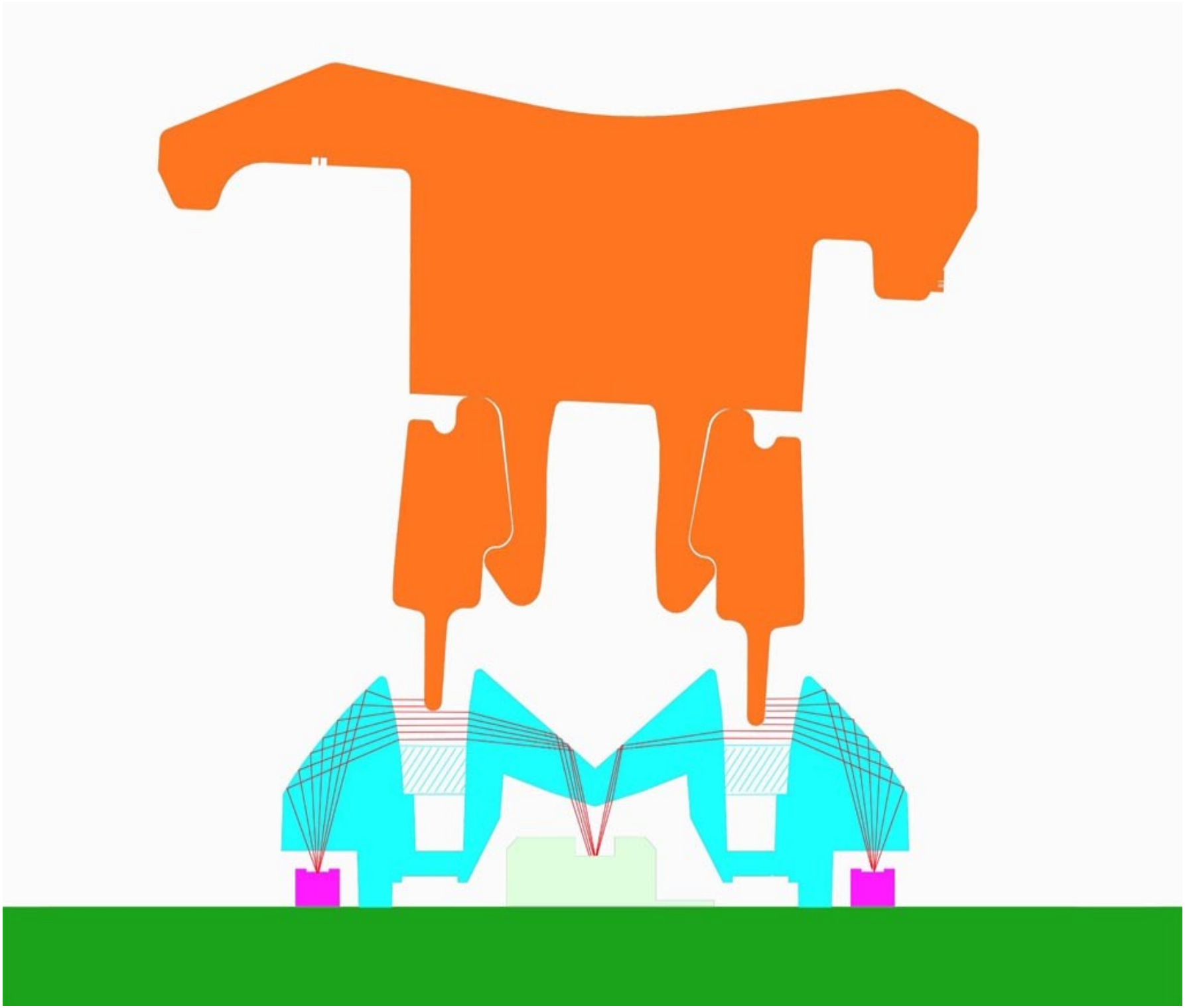


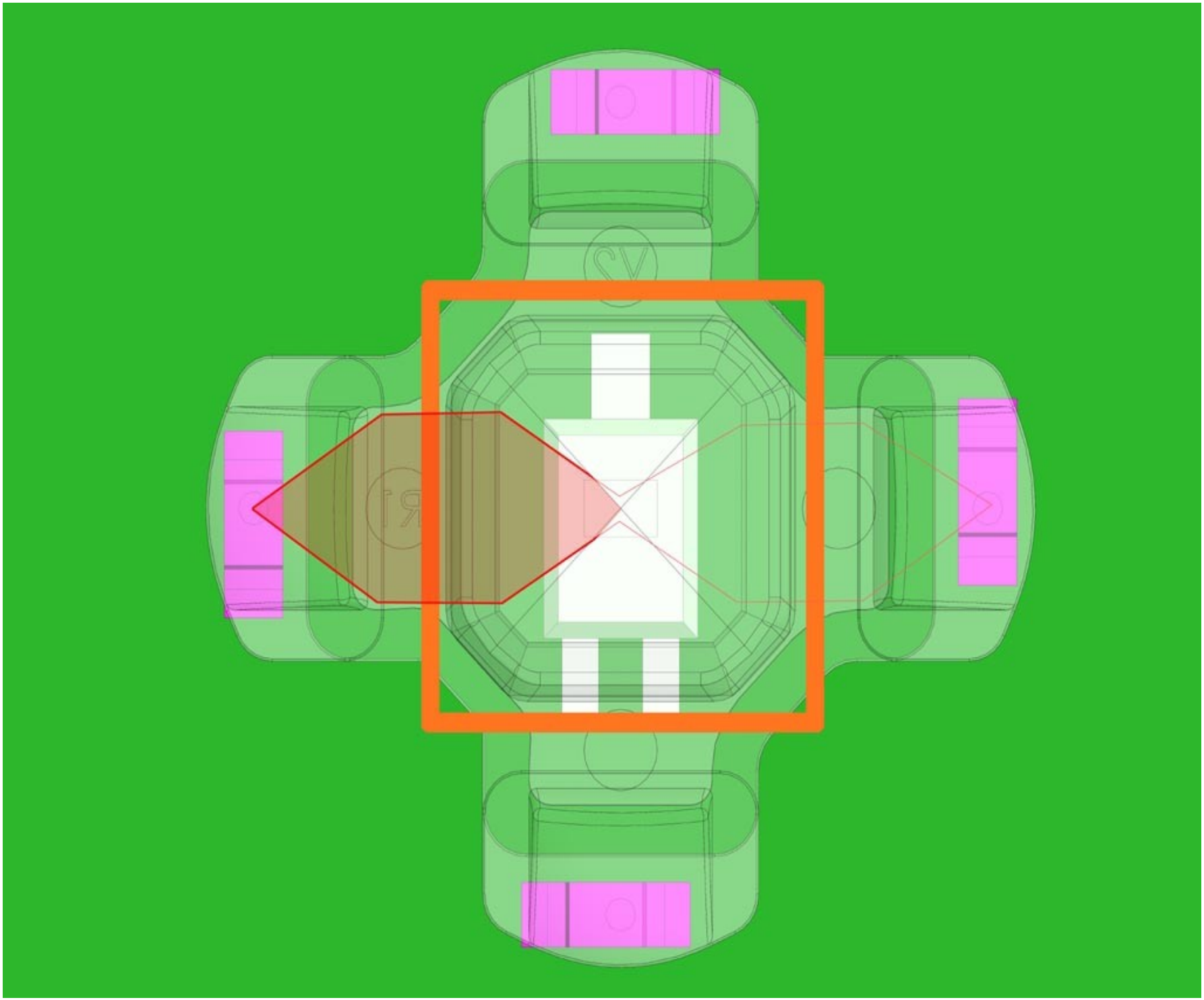


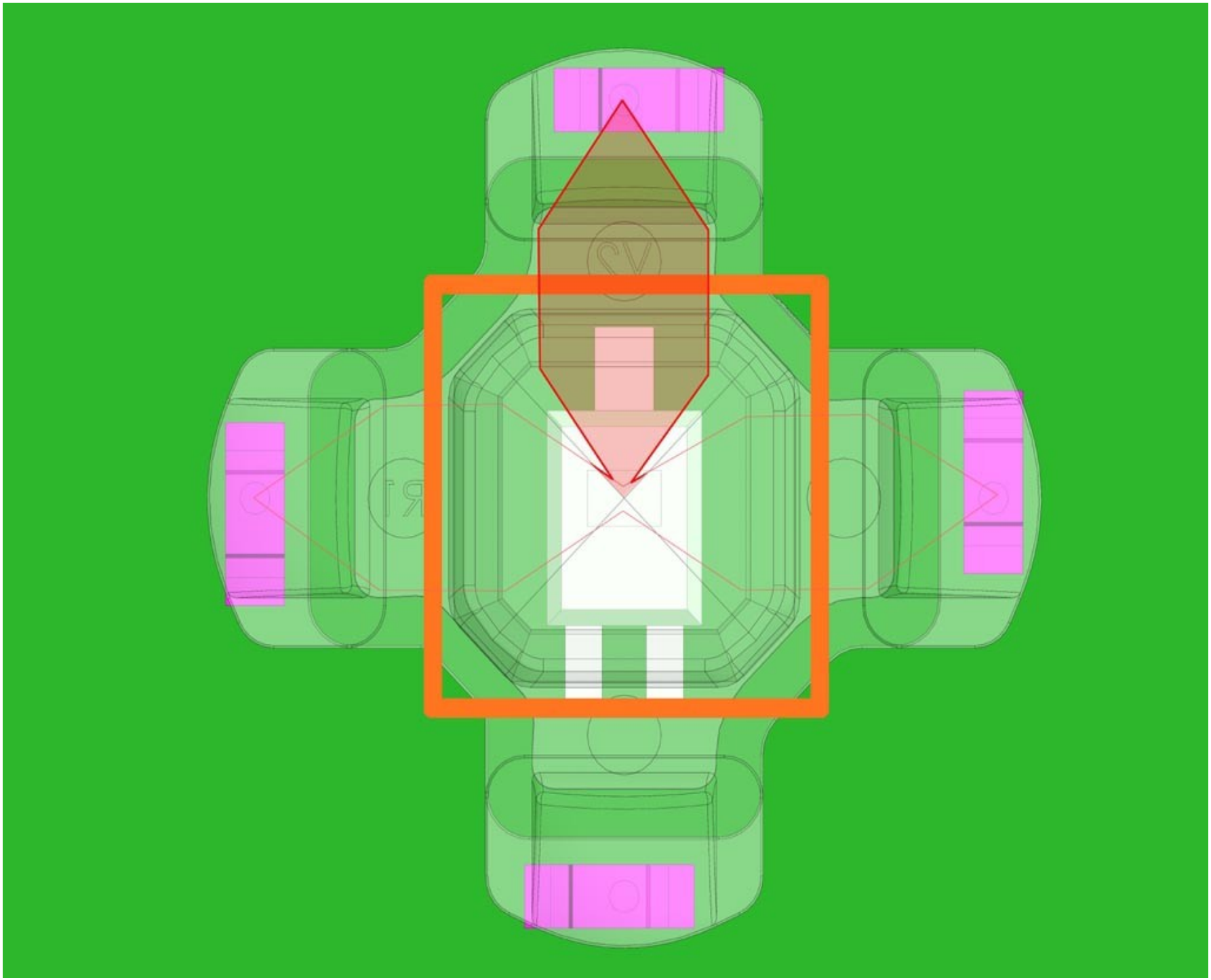


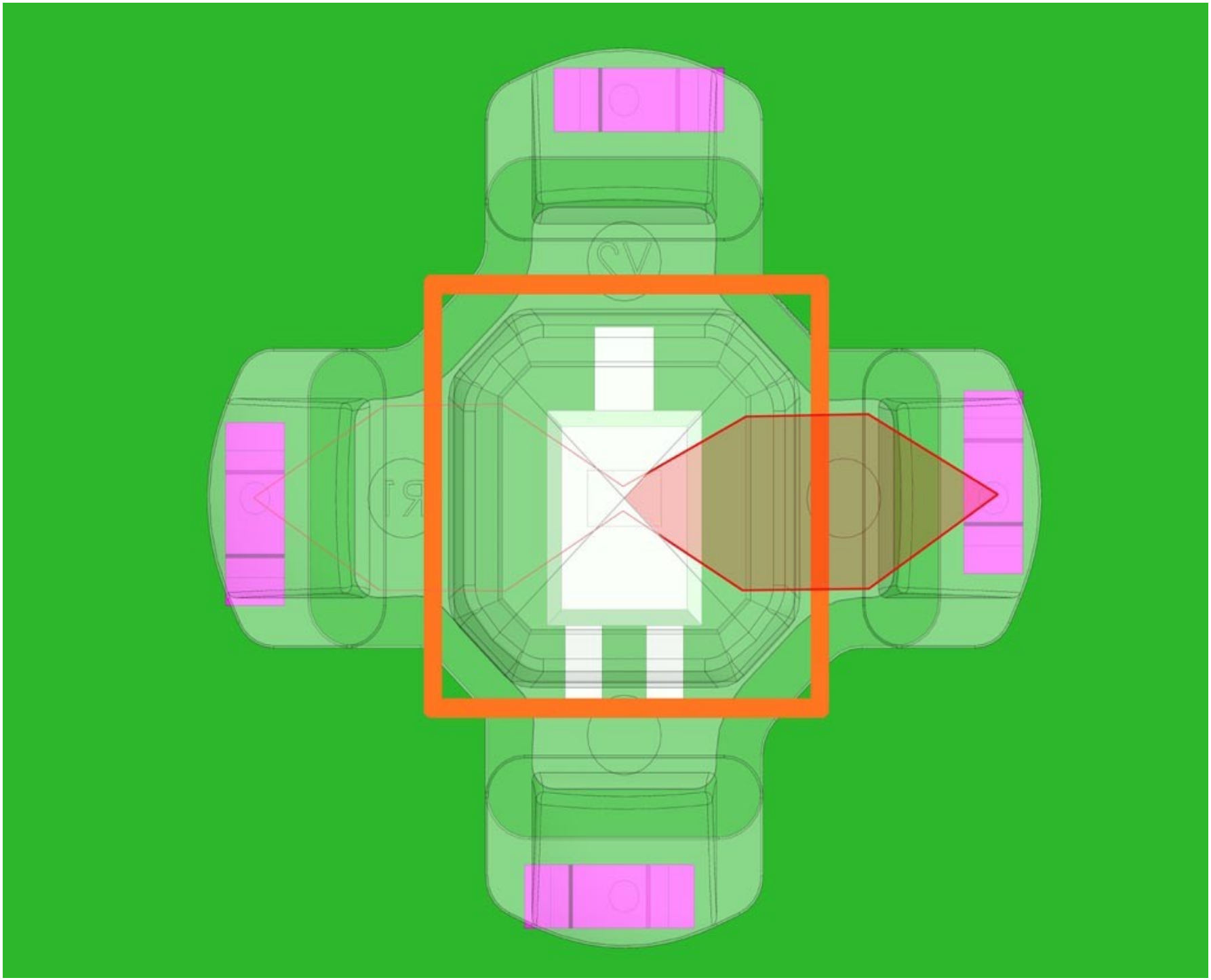


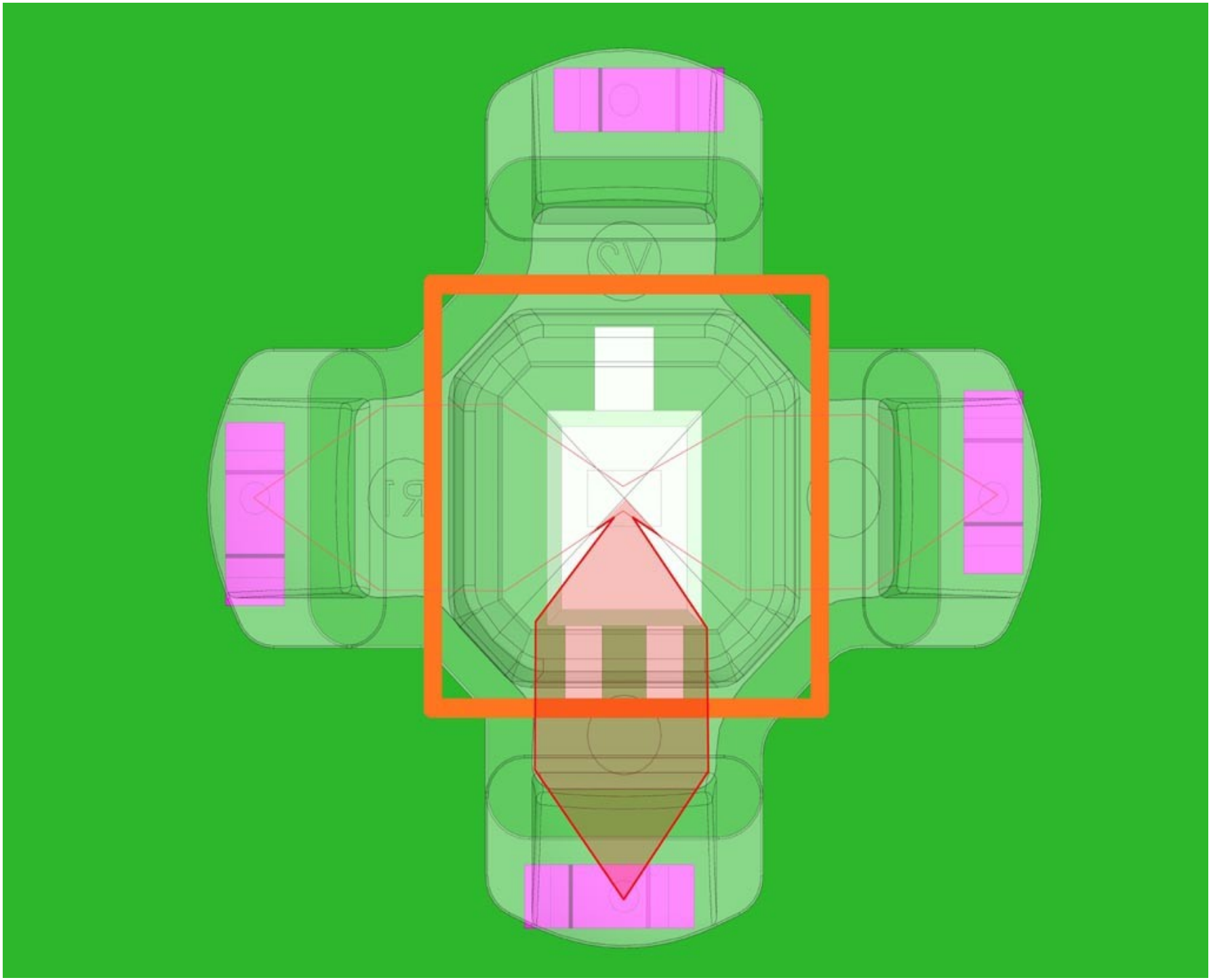


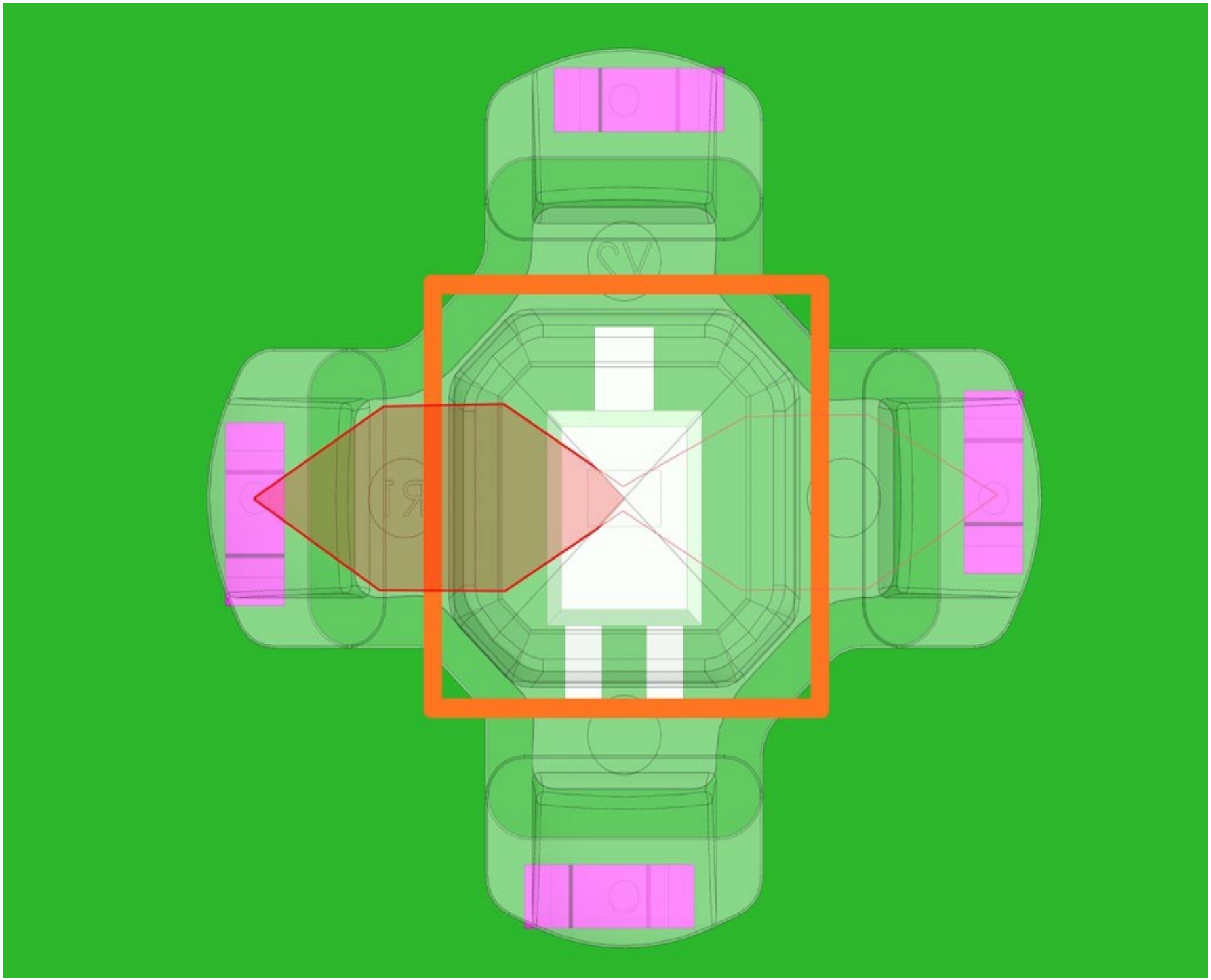












The Eigenkey specification

- Resolution to 11 bits over 0.9 mm of travel after noise removal
- Translates to around 400 nm of resolution
- Read at 500 µS, a 2 kHz rate per axis
- This data rate is preserved from end to end

The signal flow

- The Alpha and Tau connect to a Basestation which provides power to the instrument and does a lot of DSP
- They connect by a 4 wire, transformer balanced, error correcting 40 Mbit/S serial protocol suitable for stage environments
- The Basestation talks to the host PC via USB 2
- The Pico is driven directly from the PC, hence the key limit

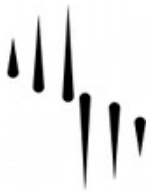
2011 and 2012

Progress for musicians in 2011

- EigenD 2.0 brings our full graphical routing and configuration tool, Workbench along with many architectural improvements
- We introduced Stage, our networked performance control tool
- We introduced initial OSC support
- We introduced very extensive MIDI routing options
- Hundreds of other small improvements

Progress for developers in 2011

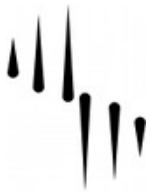
- We are now open source under GPLv3
- We now have a developer API that *ships with every install*
- We now support binary, separately shippable Agents
- We're working to foster a genuine open development environment



2012 for musicians

- Our first big focus is going to be getting 2.0 into Stable.
- After that we hope to start to return to things that making playing more interesting – new Agents and ways of working
- We think the community will start to contribute significantly to that

2012 for developers

- Our next architectural change will probably involve Rigs and making them pluggable
- There will be a lot less flux in the API and environment than in 2012, but there will still be a little so please bear with us as we break your world from time to time
- We want to get back to things that make noise!

Questions?