E-TEST: Assembly Process of the Active Platform

A Sider, C Di Fronzo, R Jamshidi, MH Lakkis, C Collette

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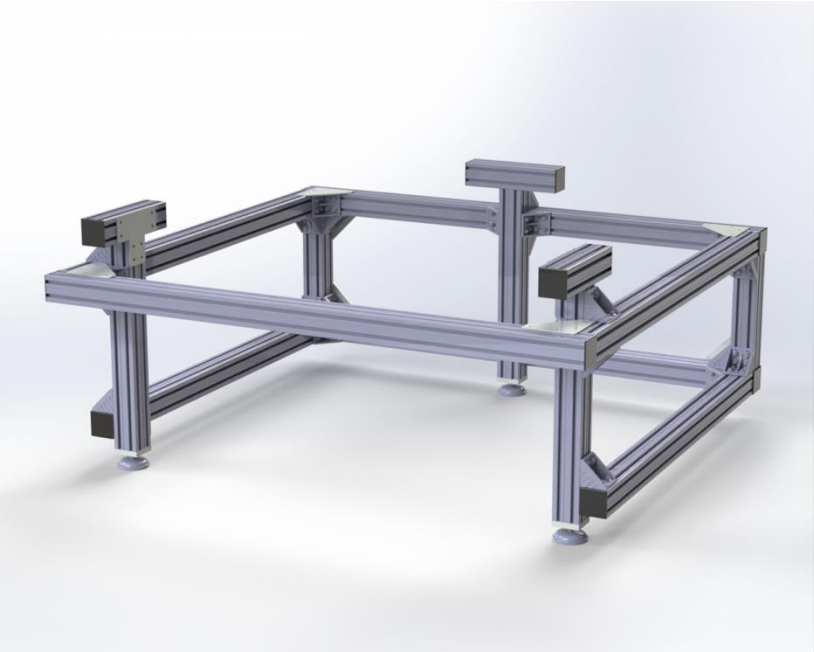
In this report the steps that should be taken in order to assemble the E-test AP setup are explained. The procedures for standard ISO8 cleanroom are applied. We use the same names for each part as in the CAD files.

Contents:

14. Installing the frame panels

1. Pre-work: the Stand

The Stand in Picture 1 is used to assemble the heavy parts of the AP.



Pic 1: the Stand, with its 3 feet.

2. First assembling on the Stand: The Ground Plate

Hook the crane on the dedicated rings and lift the Ground Plate. Place the Ground Plate on the Stand, on the 3 feet, making sure that the holes of the Ground Plate are all accessible from underneath.

Check the stability, release the crane and close the clean tents. Wipe out the surface of the Ground Plate with Isopropyl.

Pic 2: the Ground Plate, placed on the Stand.

2.1 Installation of the 3 pillars on the Ground Plate

Each pillar is 125 kg. DO NOT LIFT IT BY HAND.

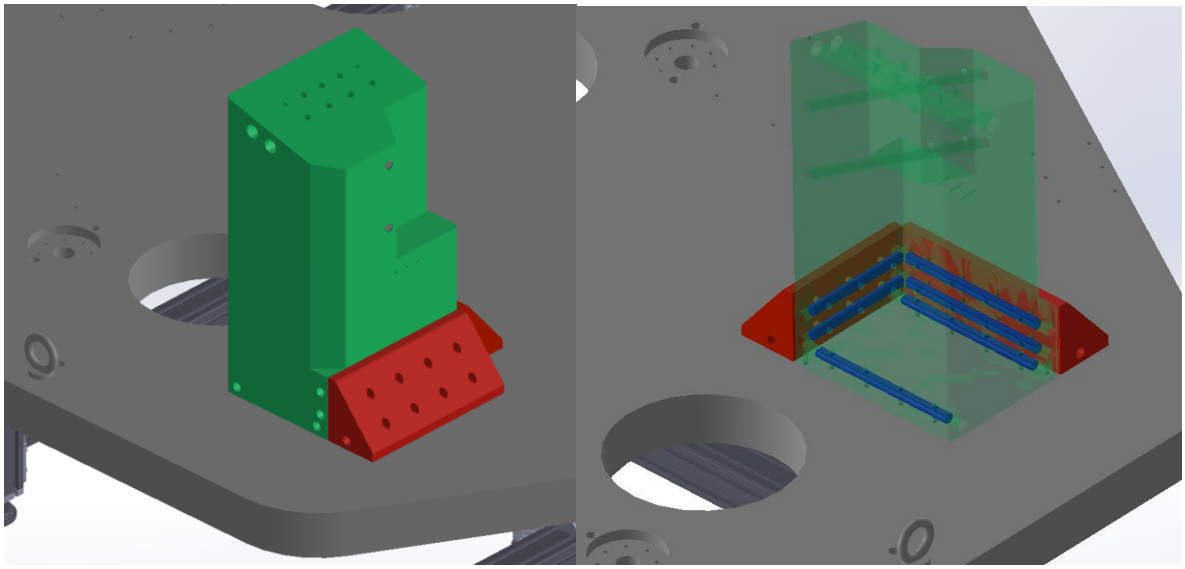
Option 1: use plastic ropes inside the 2 horizontal holes at the top of the pillars

Option 2: use 2 bars thought the 2 holes and fix the rods at the bars

Wipe ropes with isopropyl before use.

In both options, attach the ropes to the crane, lift the pillar and place it on the Ground Plate on the dedicated holes (use dowel pins to position them correctly). Then, slide the 6 Barrel Screws in the horizontal holes at the bottom of the Pillar. *Screw 8 M10-80 screws in the base of each pillar, from underneath the Ground Plate.*

After this, place the 2 Pillar Reinforcements next to the pillars, slide the Barrel at the base of each reinforcement, and *screw with 7 M10-80 screws the reinforcements to the Ground Plate from underneath.*

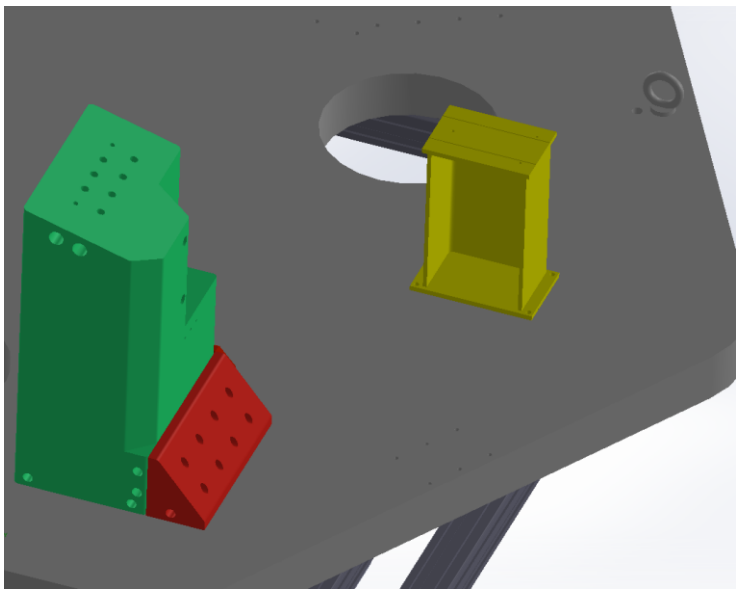


Pic 3: Installation of the Pillar, Barrels and Reinforcements in their order of placement: first the pillar in green, then sliding the blue barrels. Then placing the reinforcements in red and screw all the components from underneath.

2.2 Installation of the VAS-Ubeambase

Weight = 15 kg; they are 3 whole pieces. 2 people are dedicated to lift and move each piece.

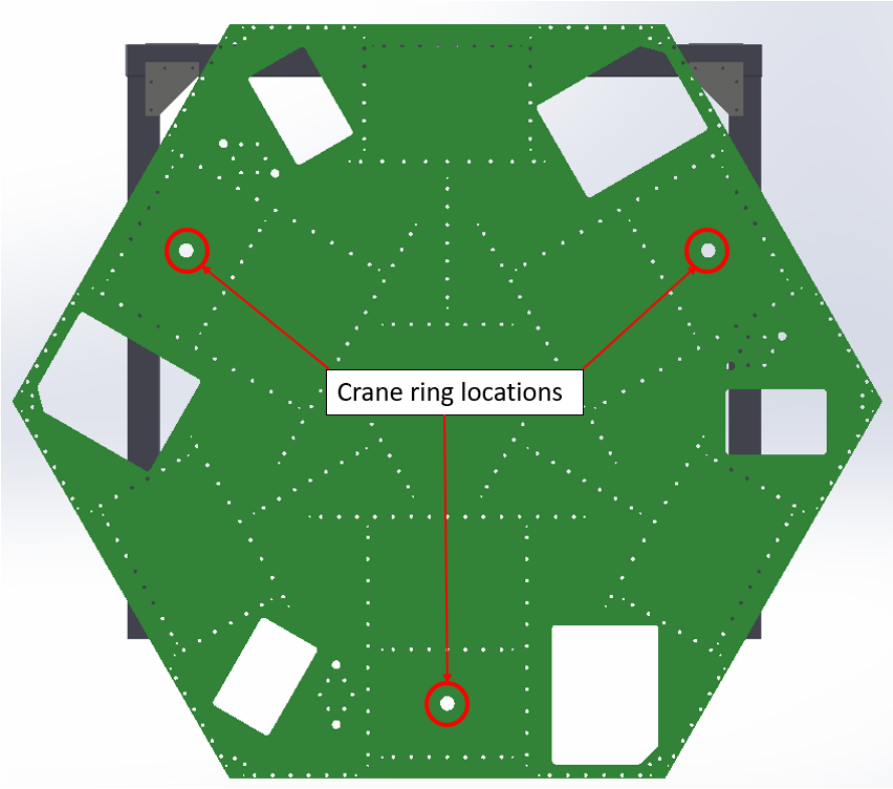
Place each piece on the dedicated 4 holes on the ground Plate, *screw with 4 M10 washers and M10-40 screws from the top.* The open side of the Ubeambase must face its corresponding pillar as in the Picture.



Pic 4: The Ubeambase, in yellow.

3. Second assembly on the Stand: The Suspended Stage

Attach the crane to the rings of the Ground Plate and lift it to move it on a table aside (available at AMOS). Use the Stand for the Suspended Stage: attach the crane to the bottom plate of the Sus Stage and place it on the Stand as shown in the picture below.

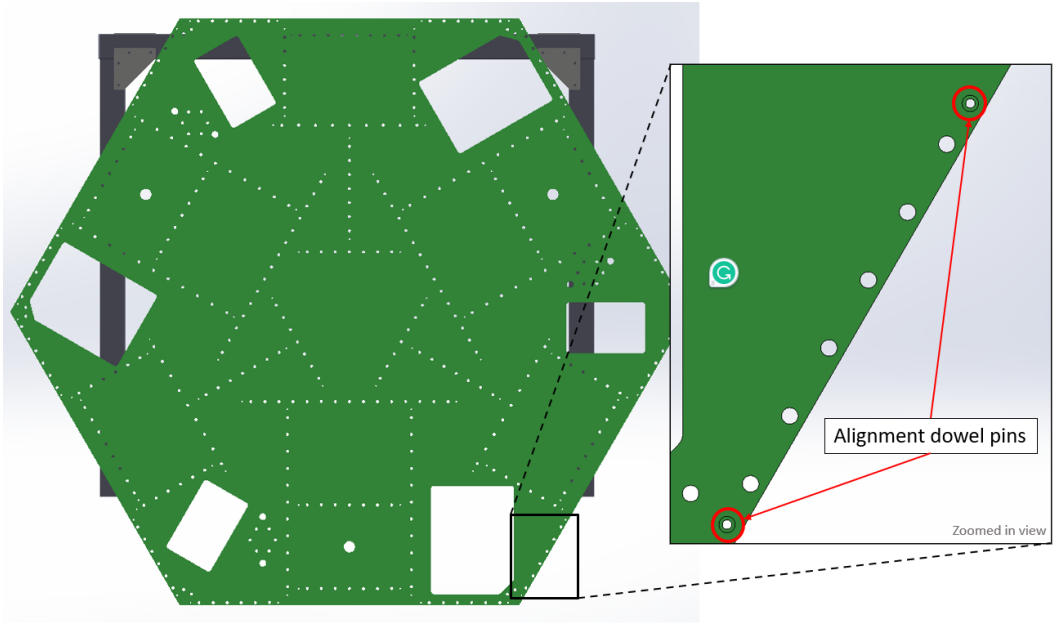


Pic 6: Sketch showing the crane ring locations on the bottom plate of the suspended stage.

3.1 Assembling the Suspended Stage

The first step is to assemble the Suspended stage as in Picture 7. There are 52 internal panels in this setup which are *screwed to the Sus Stage from underneath.* <u>The panels of the frame are not installed at this moment.</u>

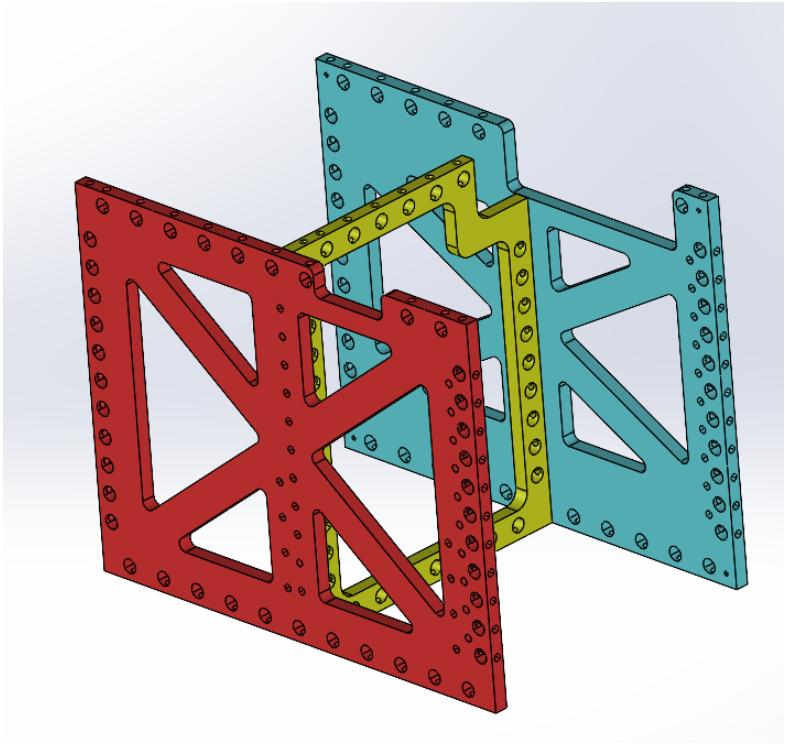
There are 150 dowel pins holes on the plate, for alignment (Pic 7): they need to be installed with *10Dx40L steel dowel pins from the top of the plate*.



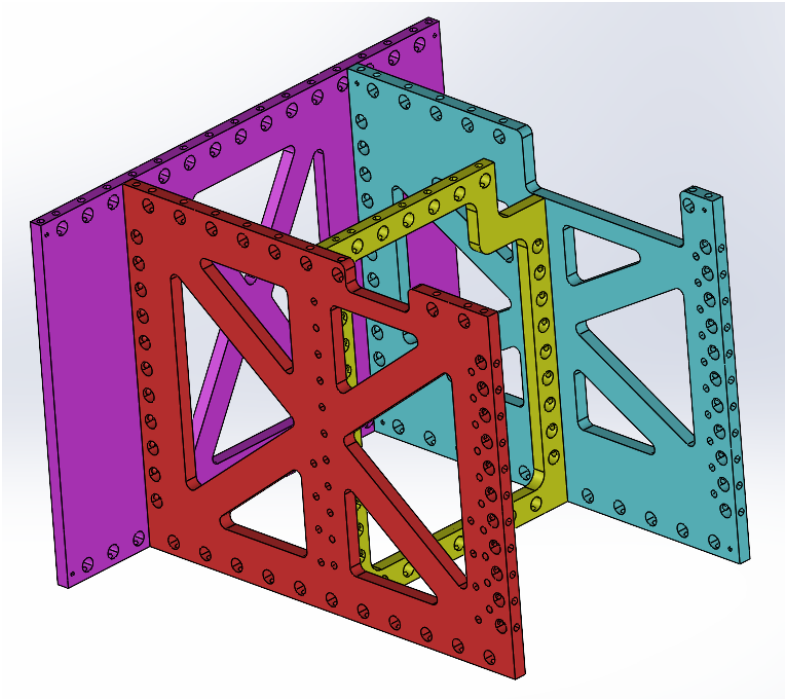
Pic 7: Sketch showing an example of locations of alignment dowel pins used for mounting vertical panels.

Pre-assemble the panels on a side, *inserting the M10 barrel nuts* in the vertical holes of the yellow panels and screw *20 M10x25 Silver Plated screws* from the red and blue panels to attach the yellow panel; insert the *M10 barrel screws* also in the vertical holes of the red and blue panels, to attach the purple panel with *22 M10x25 Silver Plated screws*, as in Pics 8 and 9.

Repeat for the other 3 pre-assembling panels.



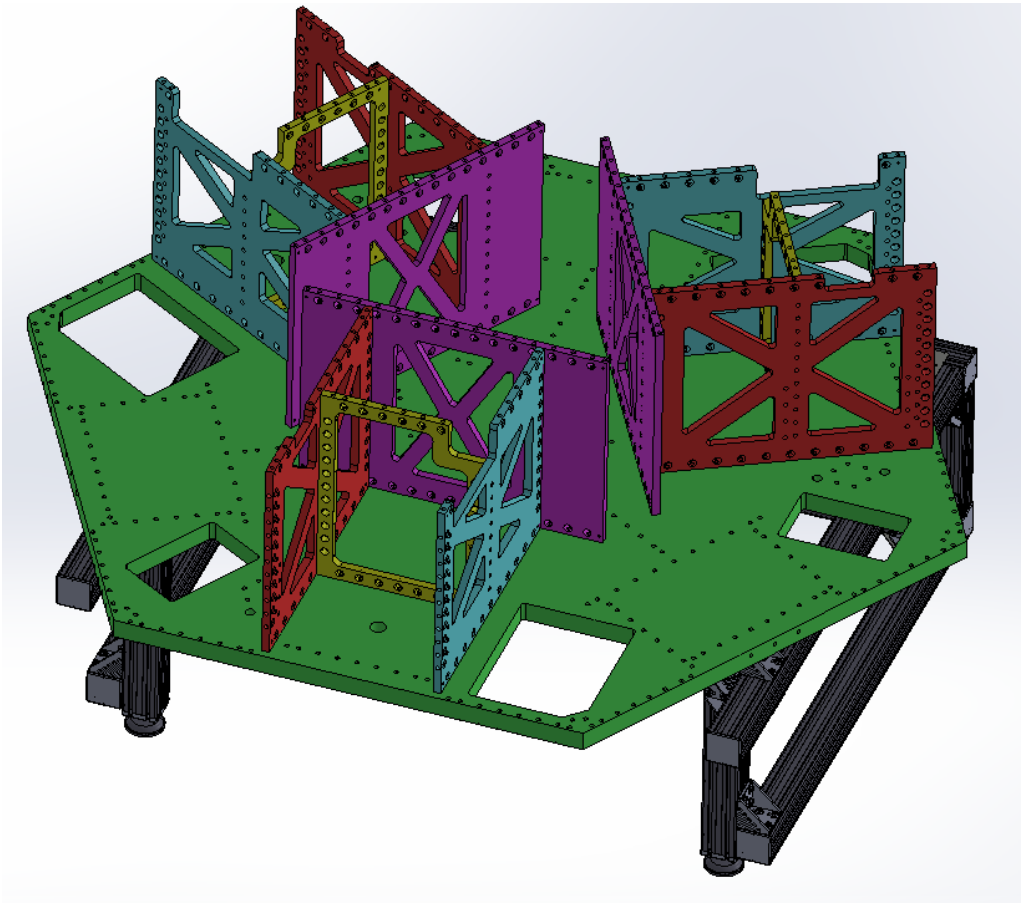
Pic 8: Sketch showing an empty panel assembled with an internal middle vertical short T profile panel and an internal middle vertical T profile panel.



Pic 9: Sketch showing the pre-assembled panels (shown in Pic 8) connected to an internal central vertical panel crossed.

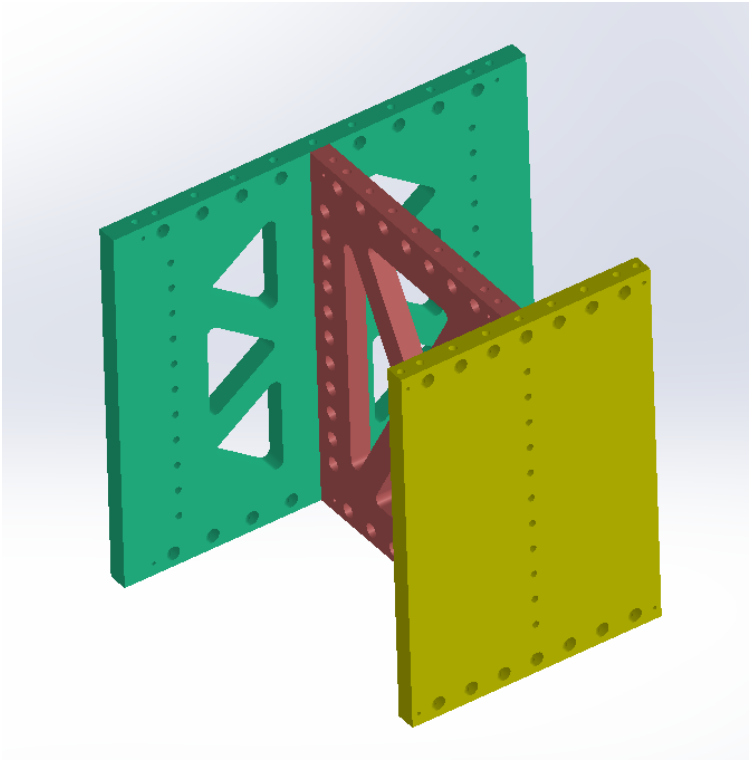
Then place the pre-assembled panels on the pins on the plate, as in Picture 10. **Each pre-assembled part is 42 kg, 2 people are required!** The dowel pins are used for aligning the panels, you can check them from a lateral hole on the panel. Insert the *M10 barrel nuts* in all the horizontal holes at the bottom of each panel, then s*crew 44 M10x70 Silver Plated screws from underneath.*

Repeat for the other pre-assembled panels.

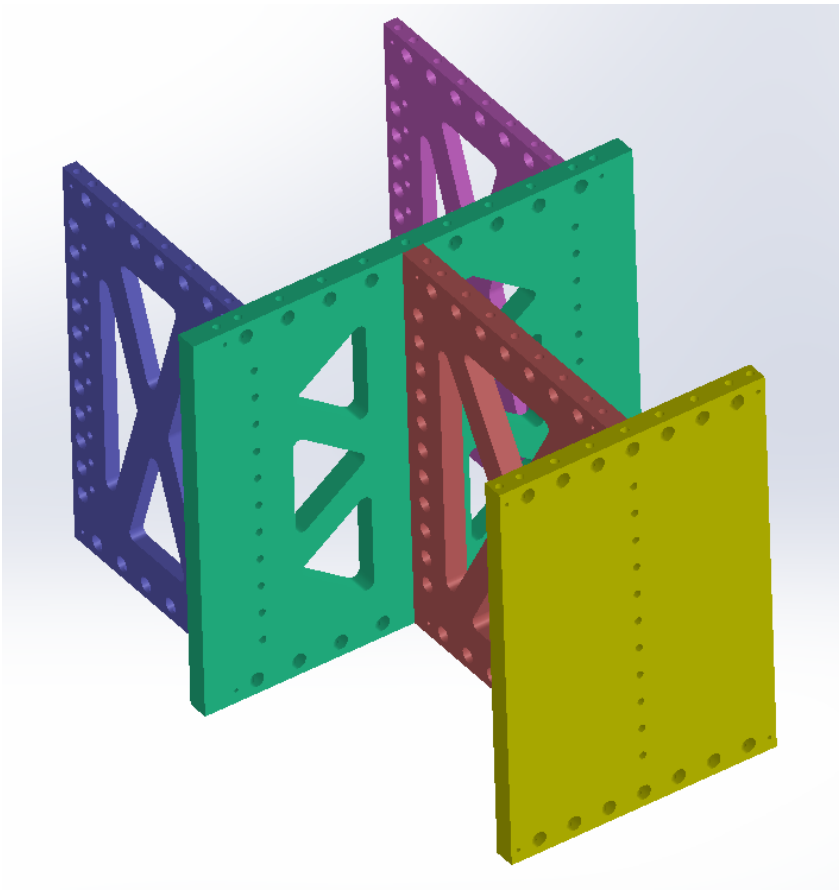


Pic 10: Sketch showing three replicates of panels assembly shown in Pic 8 and 9, mounted on the suspended part bottom plate.

Now pre-assemble the internal panels as in Pics 11 and 12 following the same procedures for screws and pins.

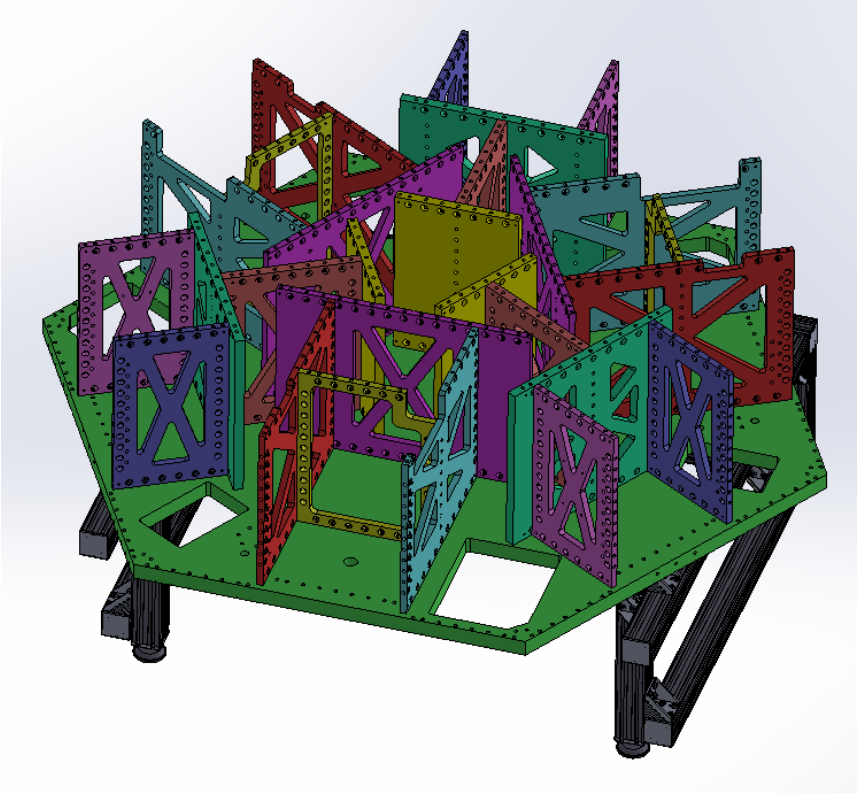


Pic 11: Sketch showing an internal radial vertical panel connected to an internal center vertical panel and an internal intermediate vertical panel.



Pic 12: Sketch showing the pre-assembled panels (shown in Pic 11) connected to internal middle vertical panels on the right and left sides.

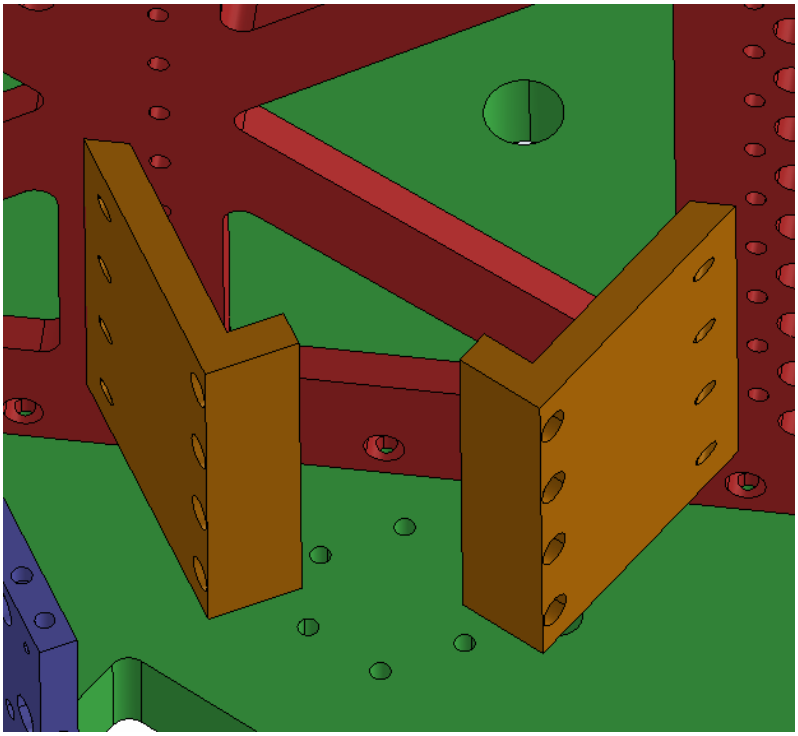
Then place each internal panel assembly on the Sus Stage on the aligning pins and *screw them from underneath.* **For this procedure it might be useful to use the crane and have a person standing at the center of the Stage, for positioning the panels correctly.**



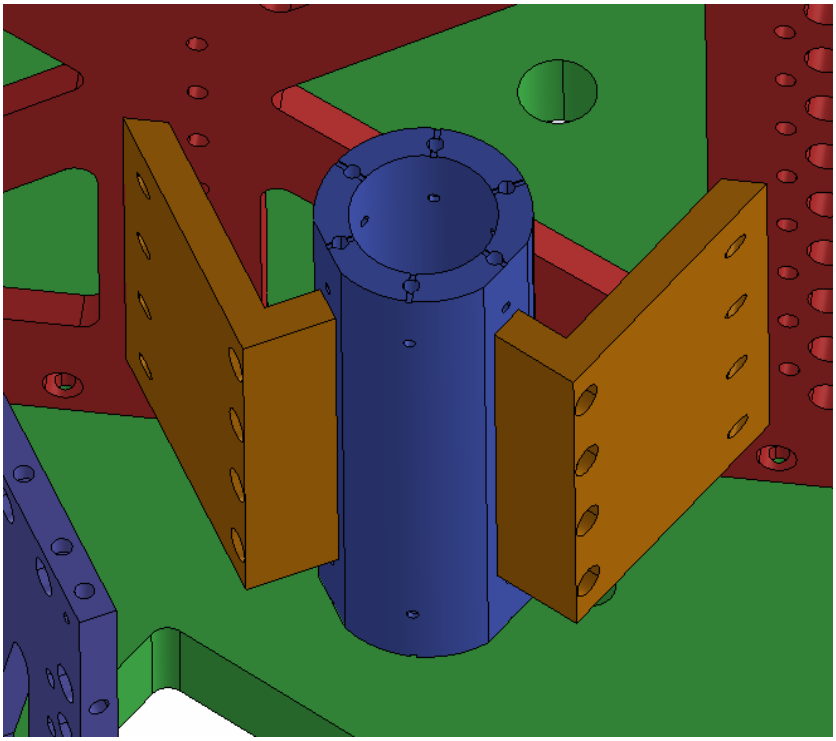
Pic 13: Sketch showing three replicates of panels assembly shown in Pic 11 mounted on the suspended part bottom plate.

3.2 Installation of the 3 Flexure Bottom Fixation sets

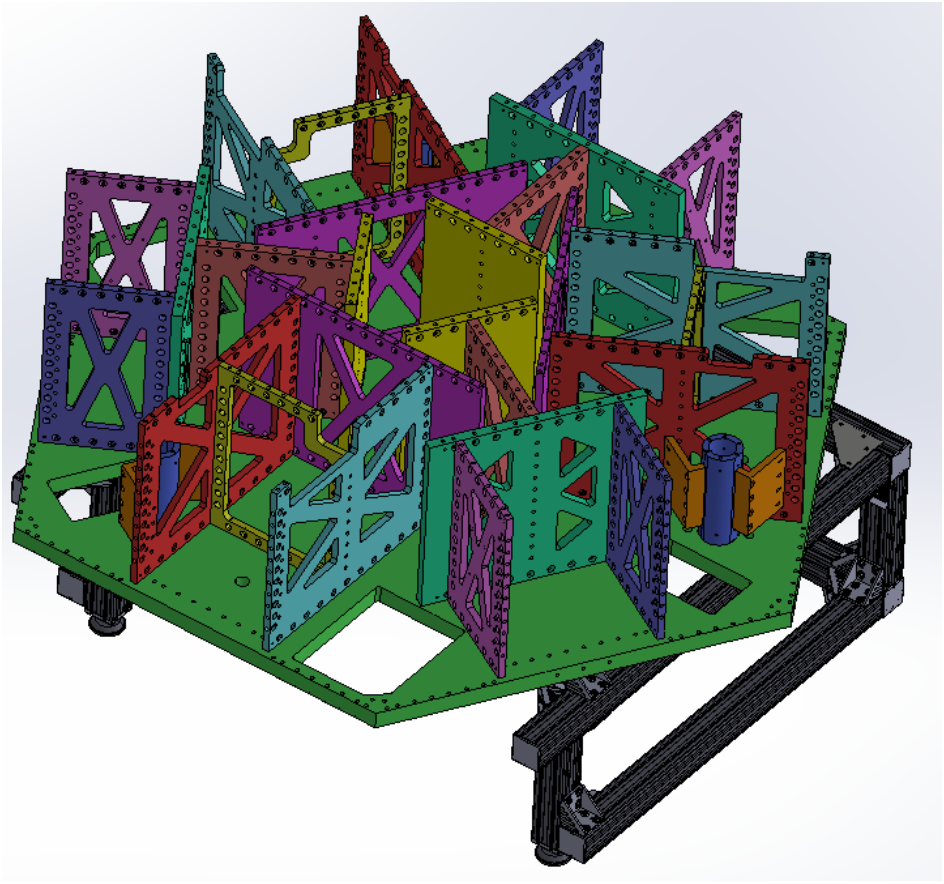
Install each Fixation Body with *6 M10x70 SSTL screws from underneath* as in Picture 14. Then install the Fixation to the panel and to the Body with *4 M8x20 SSTL screws each*, as in Picture 15.



Pic 14: Sketch showing fixation bodies installed on internal middle vertical T panel



Pic 15: Sketch showing fixation installed on fixation bodies.



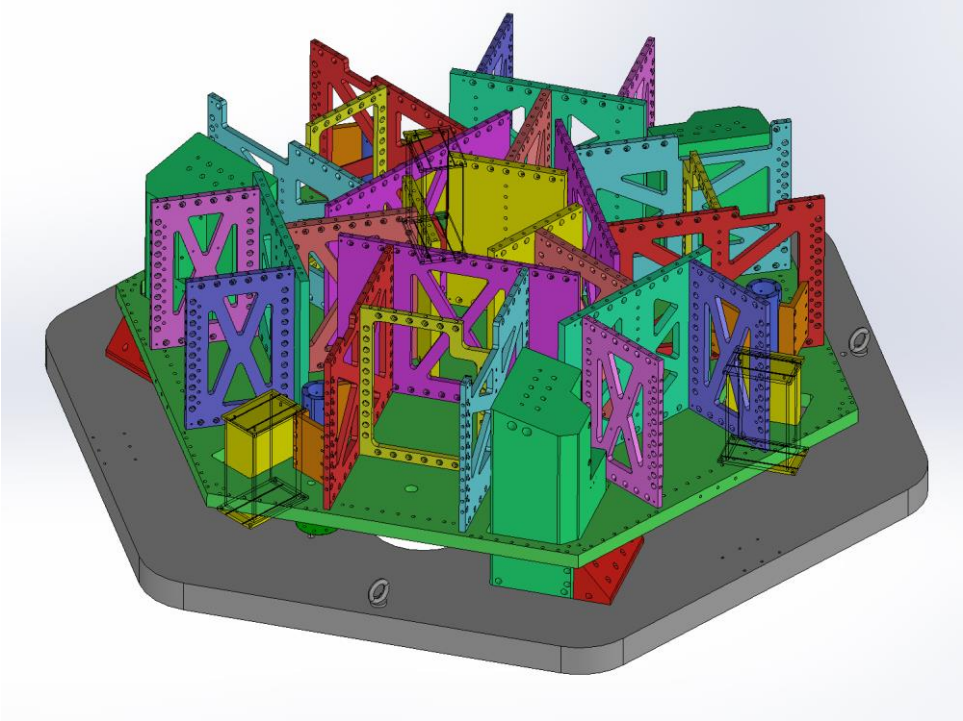
Pic 16: Sketch showing the suspended part after mounting three replicated of fixations assemble (what is shown in Pic 15).

4. Installation of the Suspended Stage on the Ground Plate

In this step, the Suspended Stage is placed on the Ground Plate. For this purpose, we need a crane which can hold the suspended stage precisely: **we need a triangular frame to attach to the crane chains in order to have the chains perpendicular to the platforms. This is available at AMOS**.

Place 3 spacers on the Ground Plate like in the Picture.

The Suspended Stage is placed on the Gound Plate, inserted in the Pillars. **Please note: 1 person for each Pillar is needed for safety and fine adjustments while placing the Stage. 4 PEOPLE IN TOTAL IN THE LAB.**



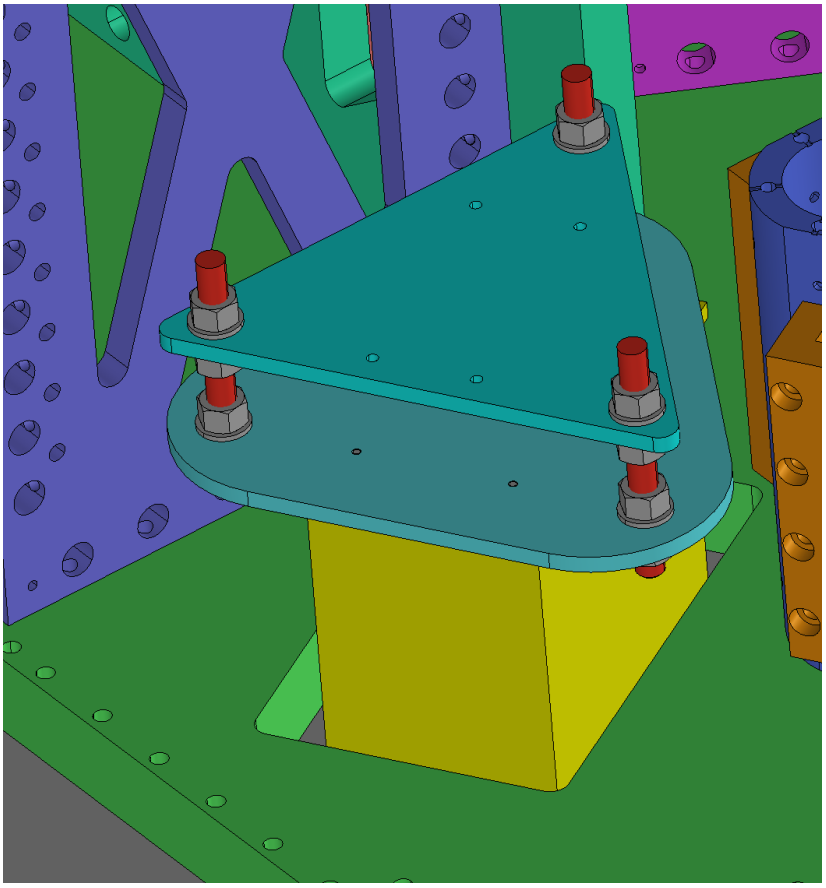
Pic 17: sketch showing suspended part sitting on leveling spacers placed on ground plate

Dismount the crane. *This setup is on the supported table where the Ground Plate was set and the rest of assembly will proceed there.*

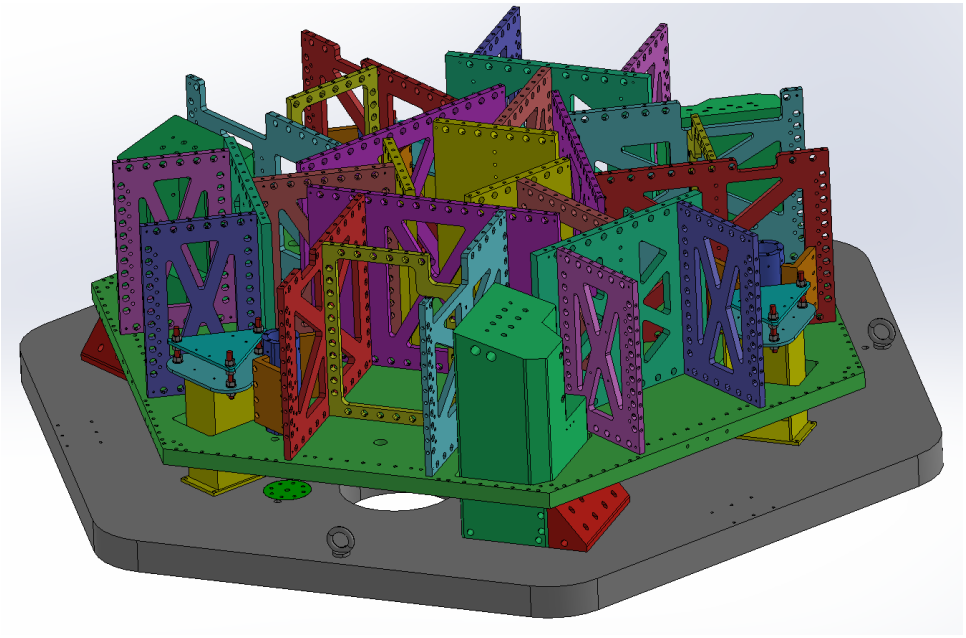
5. Assembling of the vertical actuator supports

The vertical supports of the actuators are pre-assembled aside: there are two triangular supports to fix on each Pillar. The two supports are attached together via *3 M16 ACME screws, washers and nuts* (see Picture 18, the triangle with the screw holes going upward). Mount the two supports at the minimum distance to each other, in order to adjust them later.

Then install each 3 pre-assembled sets on the 3 Pillars like in the picture 18. The sets are *screwed on the Pillar with 3 M6x20 screws from underneath*, using the opening on the side of the Pillar. **The sensors and actuators are not installed at this stage.**



Pic 18: sketch showing a mounted vertical actuator support



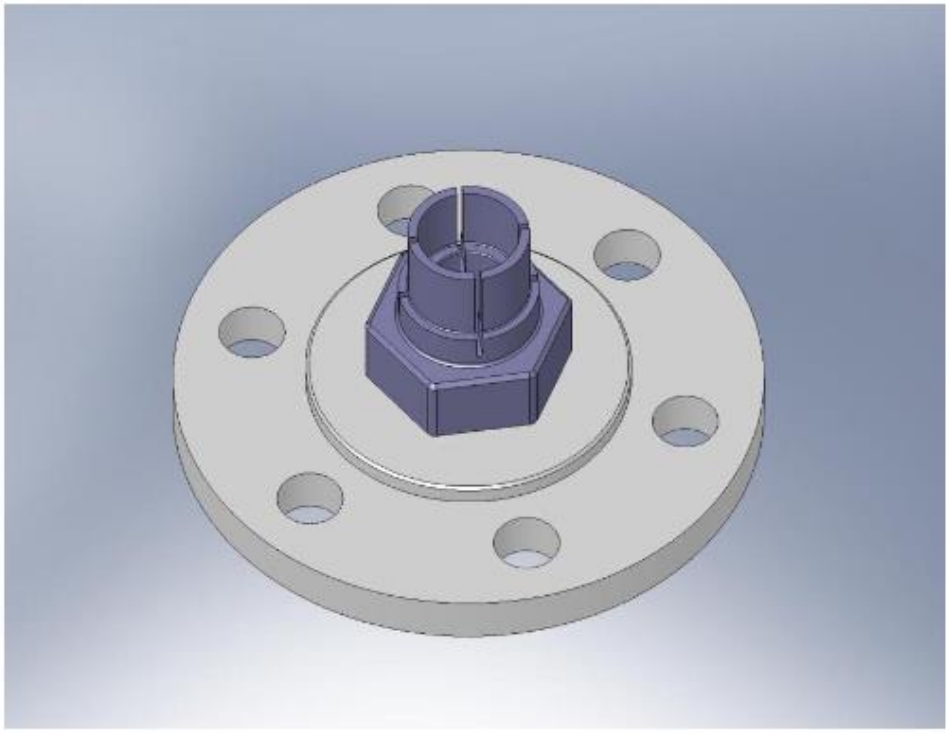
Pic 19: sketch showing the AP assembly status after mounting the vertical actuator support

6. Inserting the blades

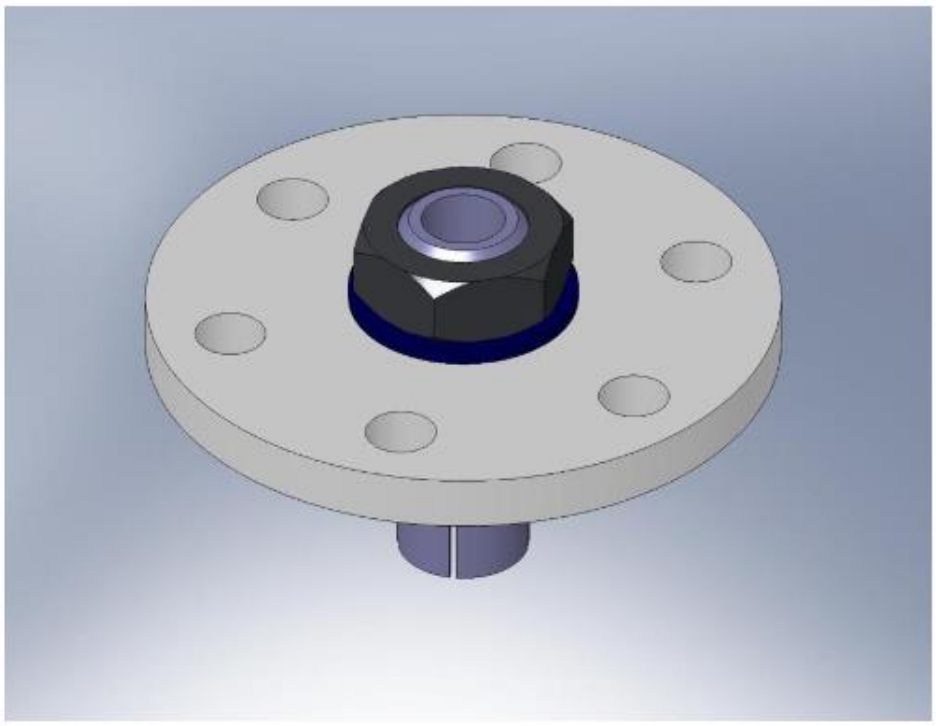
6.1 Mounting the flexures

The Flexures are fragile! Before starting this section, check that all 3 are still straight (e.g., by rolling on a surface plate).

Pre-assemble the 3 flexure sets: insert the Flexure Mount through the bottom of the Flexure Bottom Fixation Head. On the other side of the Head, *place a M36 washer and screw the M36 silver plated nut.*

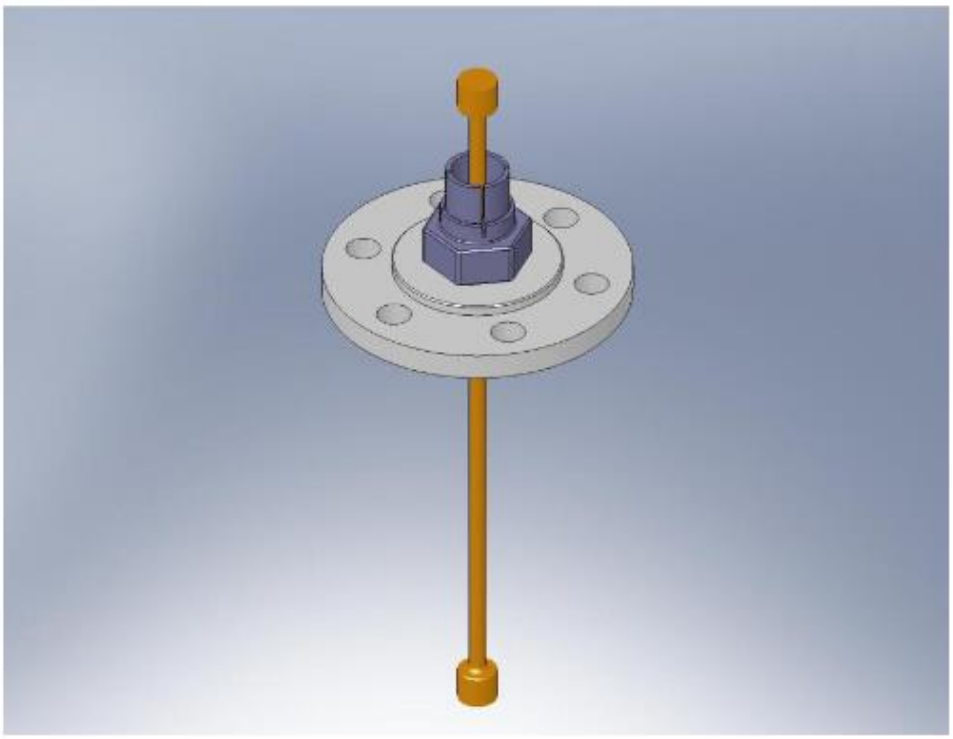


Pic 20



Pic21

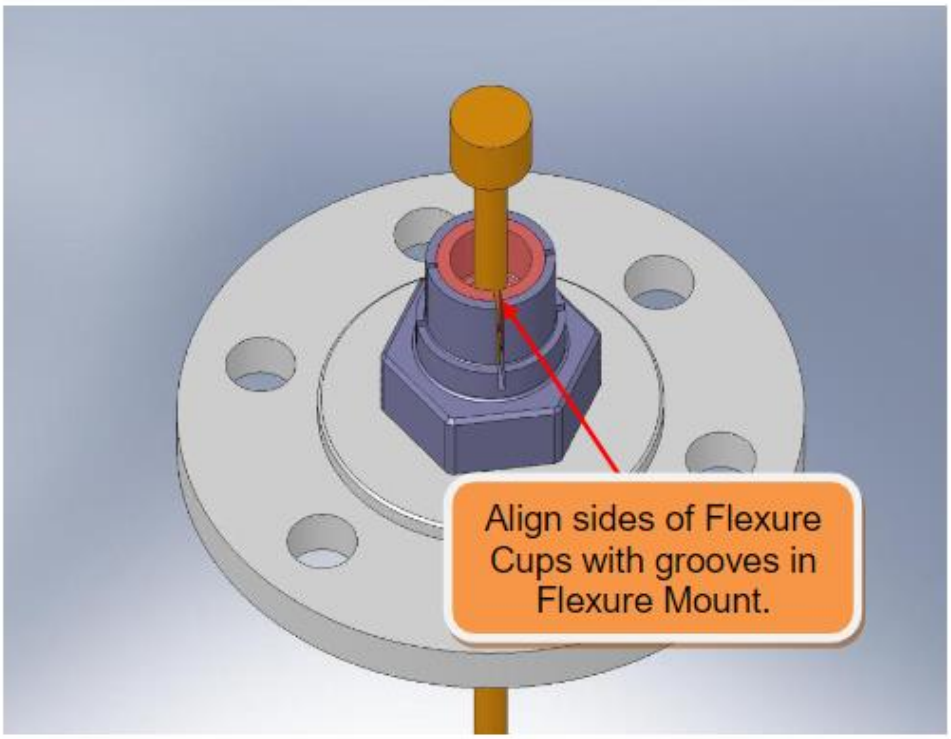
Insert the Flexure in the mount as in the Picture:



Pic 22

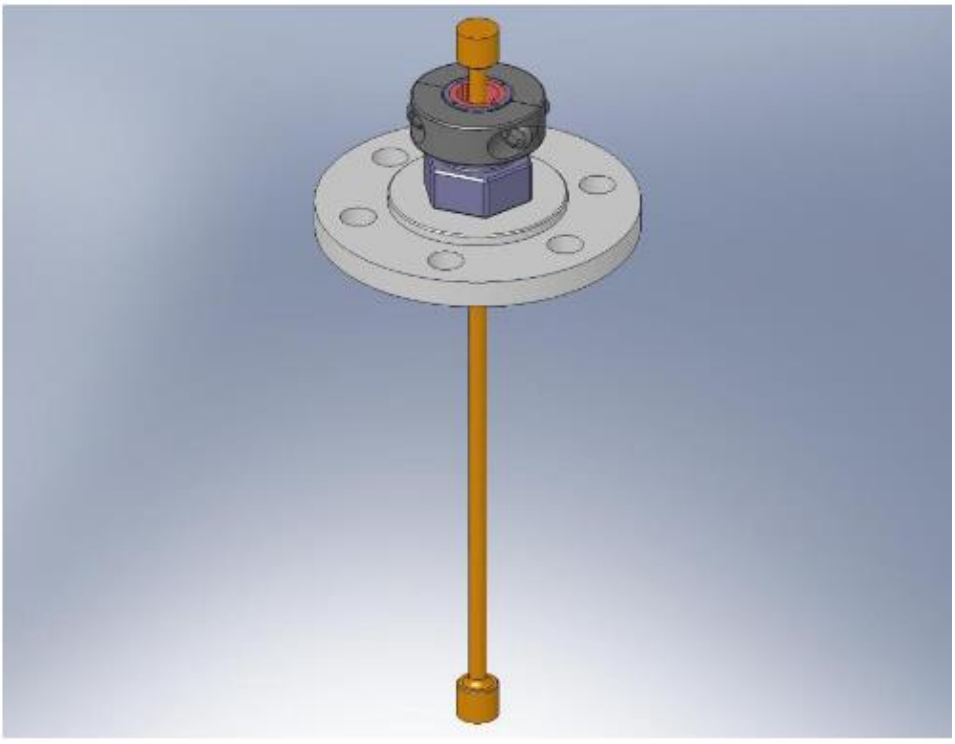
Then insert the Flexure Cups as in the Picture, inside the flexure mount from the bottom: make sure to align the sides of the cups with the grooves of the mount. The Flexure Cups

must sit flush inside the Flexure Mount. Next, we will seat the Flexure within the Flexure Cups. **These are the most critical joints in the entire assembly!**



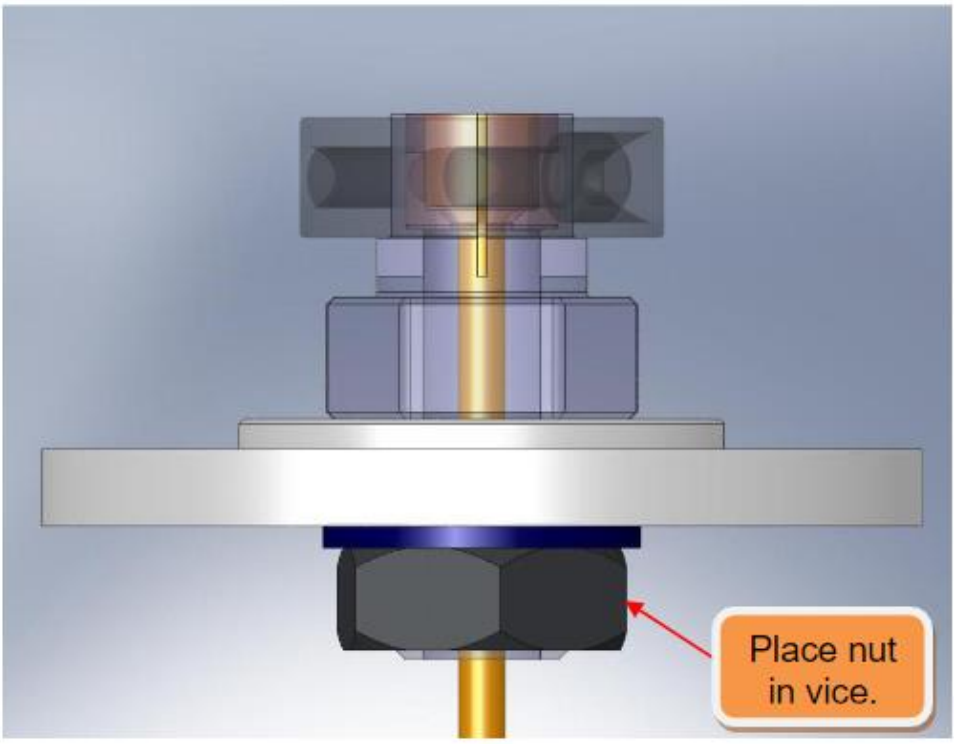
Pic 23

Place the Lock Collar with a *M4x6 silver-plated screw* over the collet end of the Flexure Mount, as shown in the Picture: **do no tighten the screw yet**.



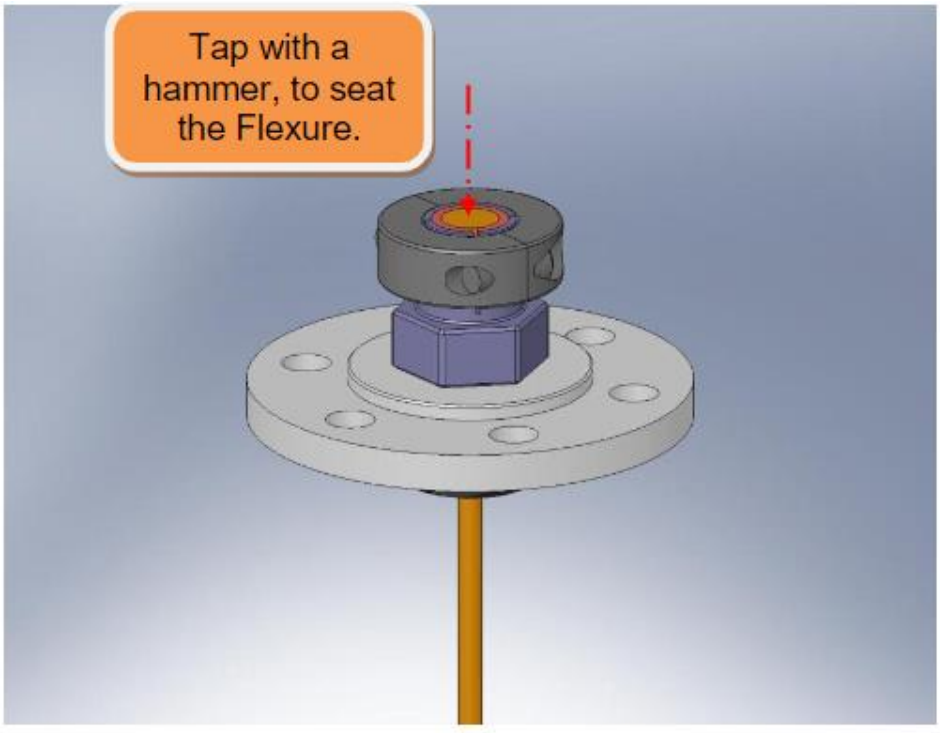
Pic 24

Hold the nut below with a vice, and push the head of the Flexure into the Flexure Mount, until the Flexure and Flexure Cups are all fully seated. **Partially tighten the Lock Collar screw.**



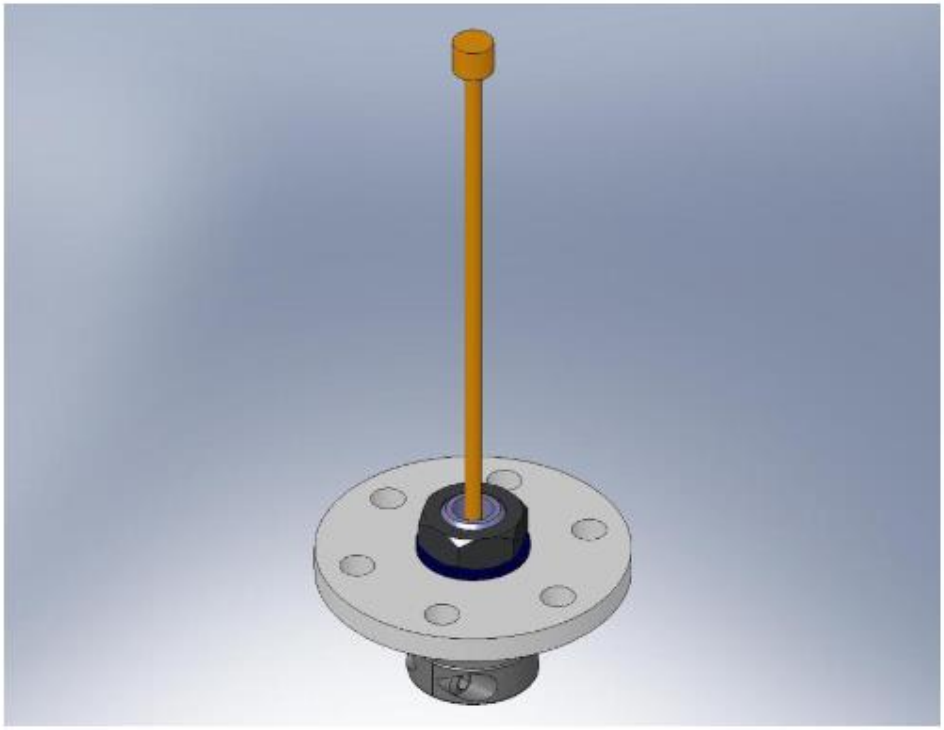
Pic 25

To improve the seating of the Flexure and Flexure Cups within the Flexure Mount, lightly tap the Flexure with a hammer. When you are satisfied that there is good metal-on-metal contact everywhere, **torque the Lock Collar screws to final spec.**



Pic 26

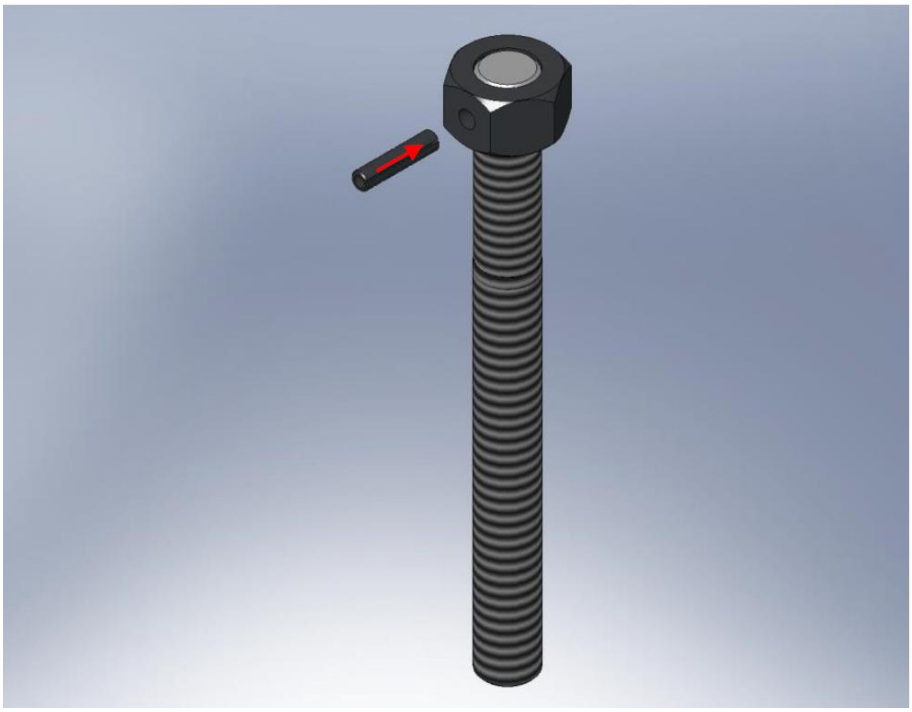
Place aside the final Flexure Assembly (Picture) to use it later. Do the same for the other 2 assemblies.



Pic 27

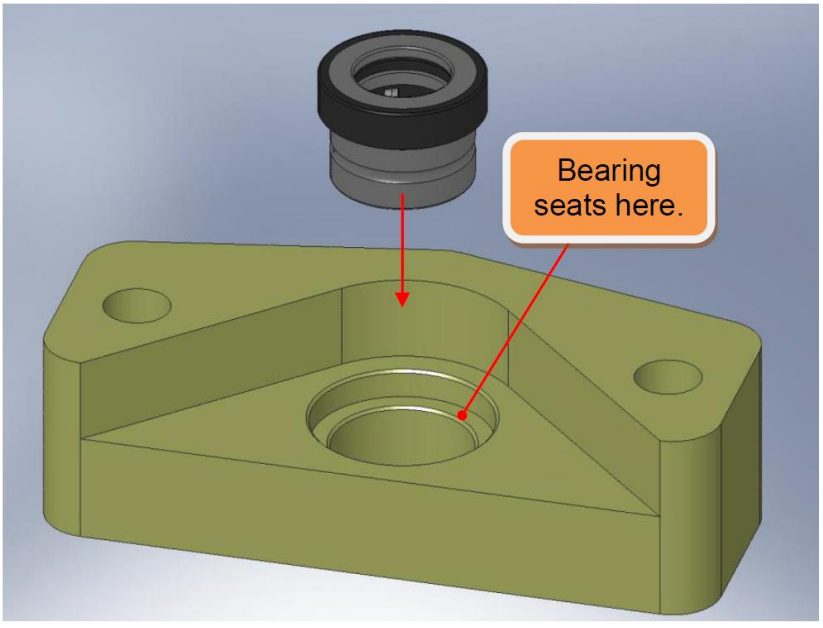
6.2 Pre-assemble the Spring Traction Plates assemblies

Thread ACME hex nut (Dependable ACME, M16) onto one end of a *M16x175 ACME Screw*, until its top is flush with the end of the screw. Drill a **1.6 mm** hole through the side of the nut/screw combination. Press a **compatible goupille** into this hole, as shown in the Picture. ***Do this job outside the cleanroom, possible in a workshop with the help of professionals. Clean everything before re-entering the cleanroom. Make sure that the ole is also well clean.***

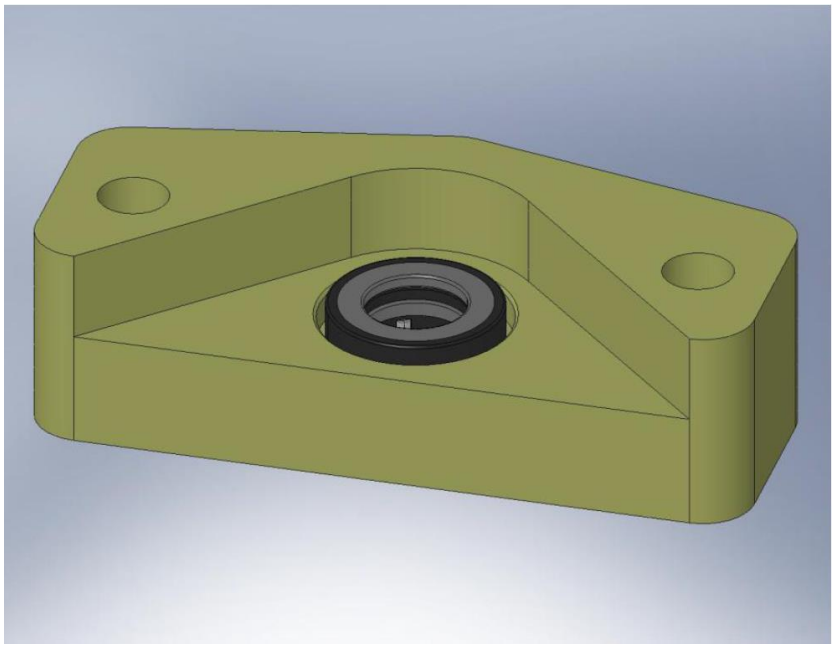


Pic 28: 1.6 mm pin going in the M16 hex nut and M16x175 ACME Screw

Press combination bearing into Spring Bottom Traction Plate, as shown in the following Pictures. **Note: the bearing must be bath-cleaned before it is installed in this tool. The cleaning process removes all lubrication (requiring temporary disassembly of the bearing) from bearing surfaces. Therefore, the bearing wears quickly when turned under load, and should be replaced when motion begins to feel rough.**

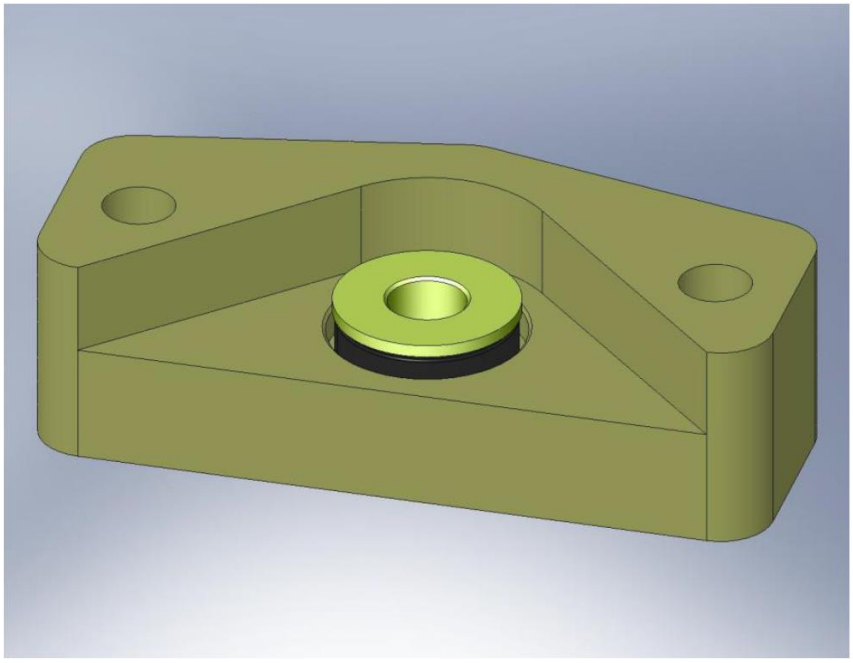


Pic 30



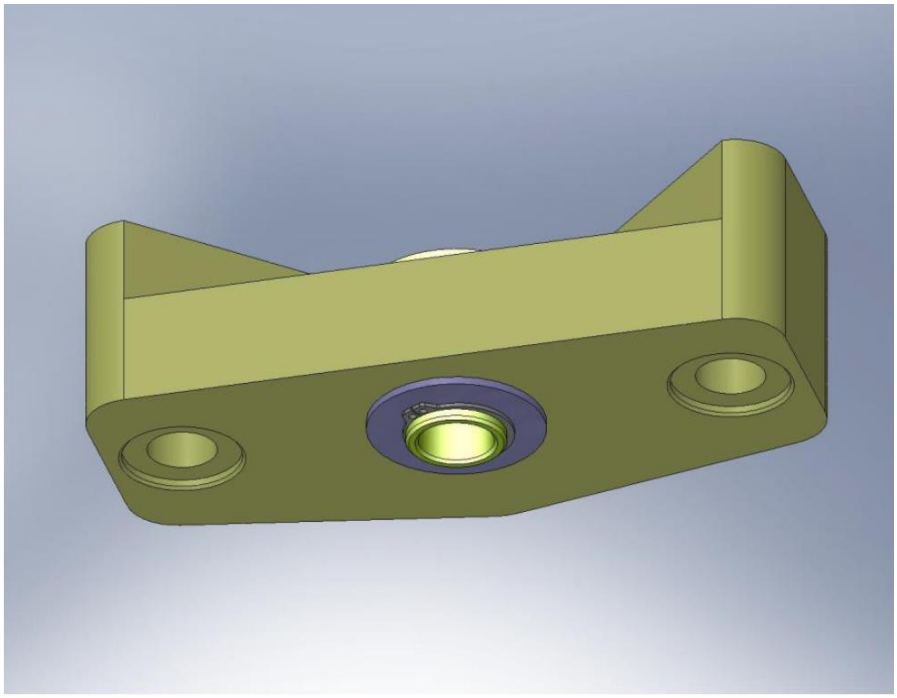
Pic 31

Insert Spring Bottom Plate Conversion Bushing through top side of combination bearing, as shown in Picture. (The Bushing allows us to use the metric bearing with our English ACME Screw.)



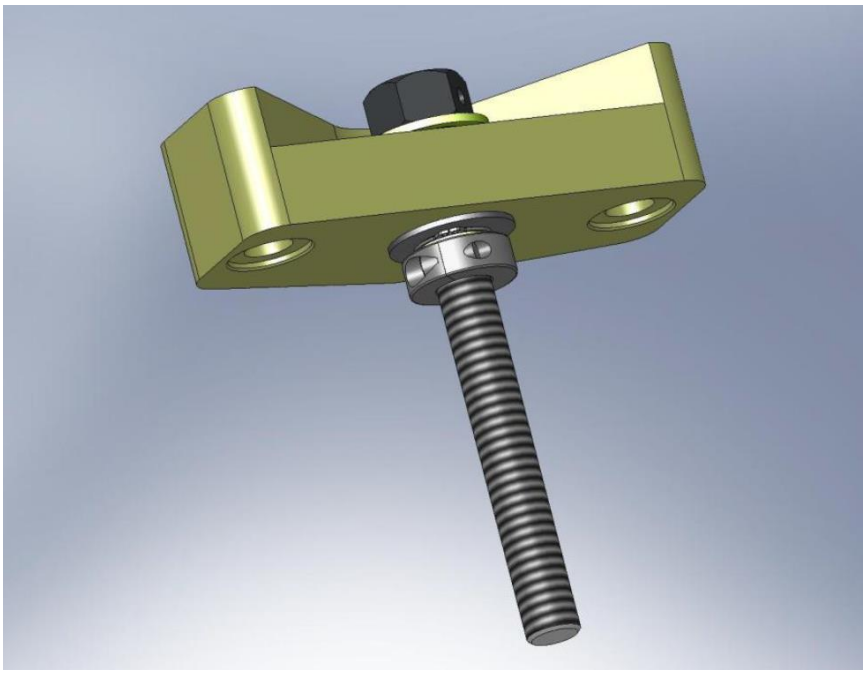
Pic 32

Place Spring Bottom Plate *25 mm Washer* over bottom of Conversion Bushing. Clip Seeger retaining ring onto the groove in the Bushing (we need to buy x20 of these rings).



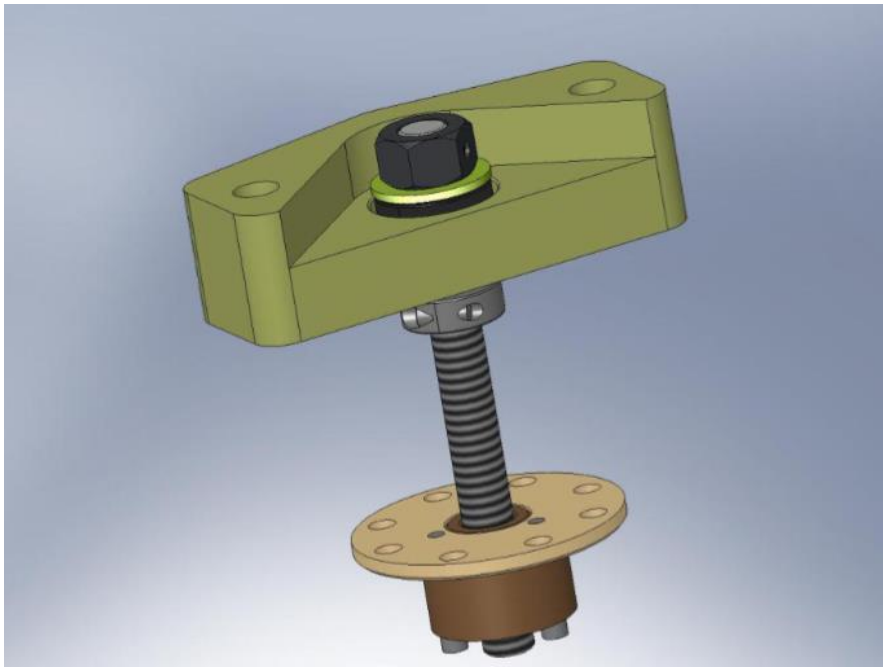
Pic 33

Drop ACME Screw through top of Conversion Bushing, as shown in Picture. Slide a nut directly below the Bushing. Tighten the nut.



Pic 34

Thread ACME Screw into PS Base Nut, as shown in Picture. Set aside. *The assembly of the Bottom Spring Plate is complete. Repeat for the other 2.*

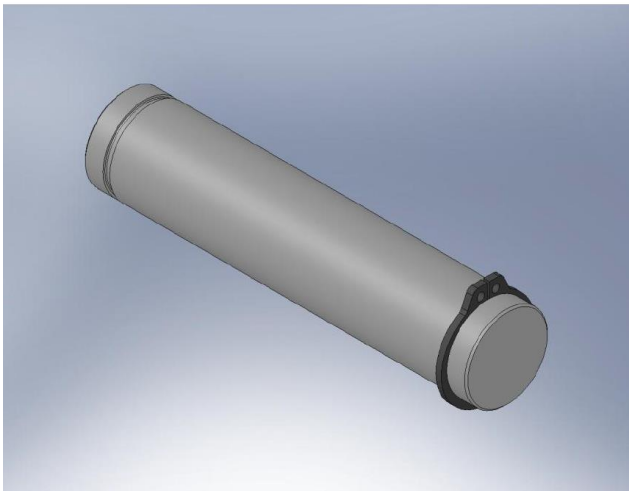


Pic 35

Screw a ball joint rod end onto the same end of each Pull Rod SILKAC. **WE NEED TO BUY IT!** Continue screwing the rod end onto the Pull Rod, until it reaches the end.

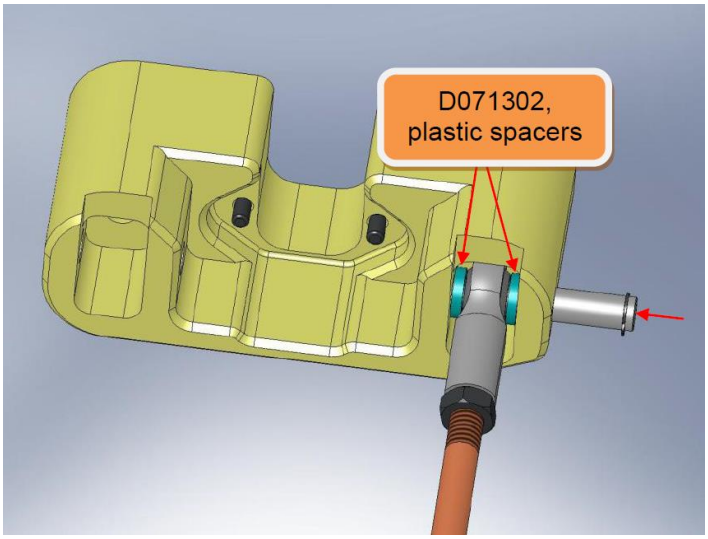
Pic 36

Snap a retaining ring on one end of each of the Ball Joints, as shown in Picture.



Pic 37

Push each Ball Joint through opposite sides of the Top Plate Caps, as shown in the Picture. Each Joint should pass through i) a Plastic Spacer, ii) a rod end at the end of the SILKAC, and iii) another Plastic Spacer, before pushing back through the Cap.

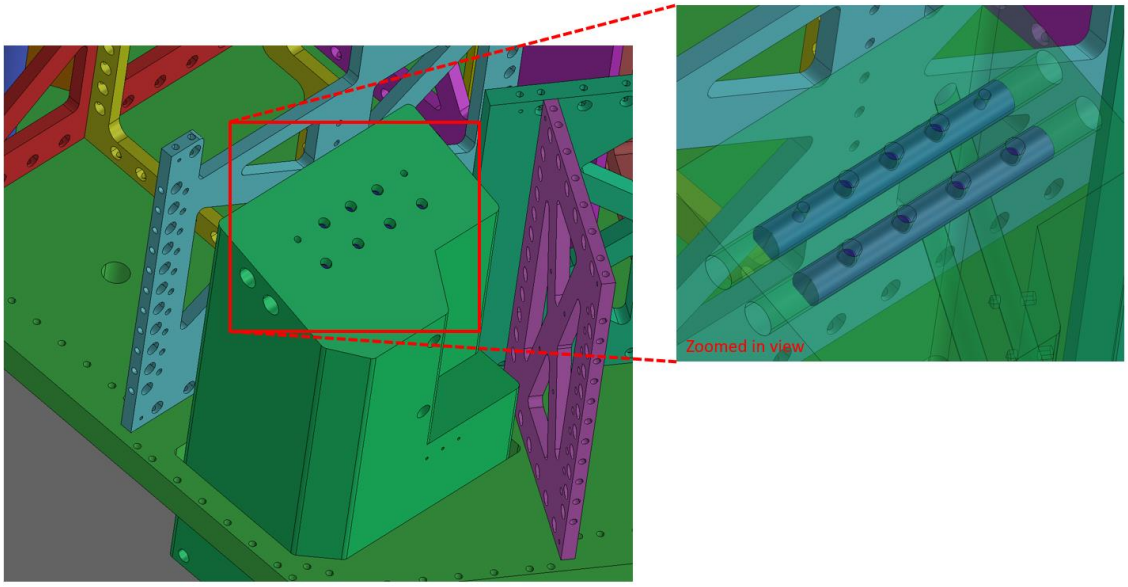


Pic 38

Snap another retaining ring onto the Ball Joint, to hold the assembly together. Do the same with the other rod. Repeat for the other 2 Top Plates. *The Top part of the spring assembly is completed.*

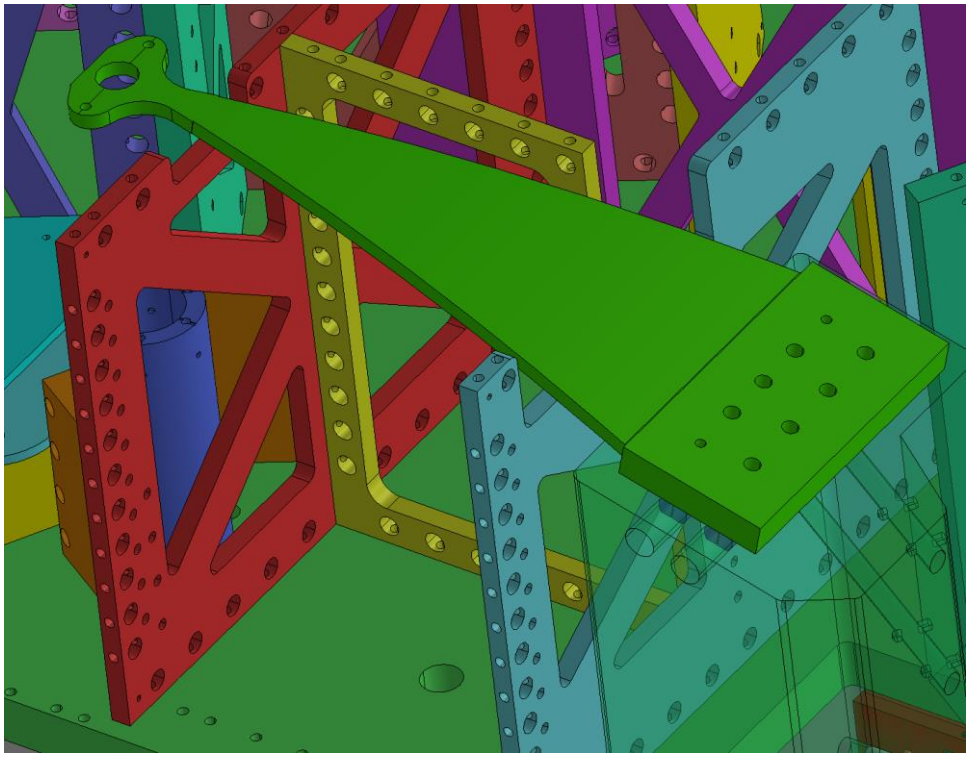
6.3 Attach and Load Springs

Insert a 3-hole and a 4-hole *M16 Barrel Screws* into each of the Pillars, as shown in Picture.



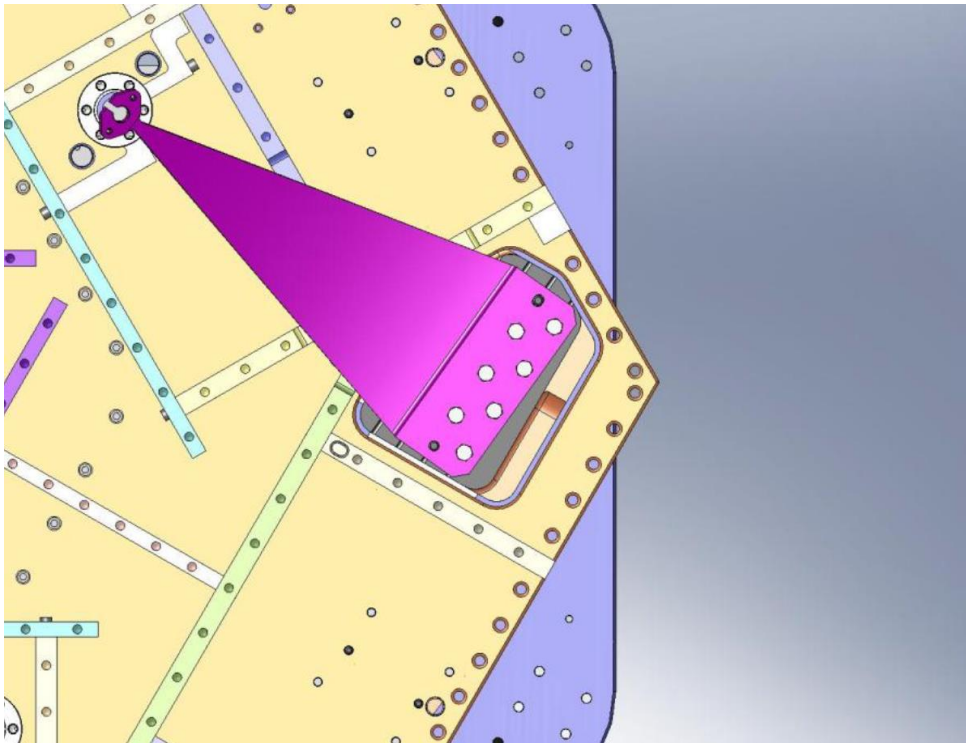
Pic 39

Insert 2 alignment pins in each Pillar. Place the 3 flat blades and screw on the Pillars with steel 7 *M16x80 screws and M16 washers.* **Each blade is 23 kg: 2 people should do the job.**



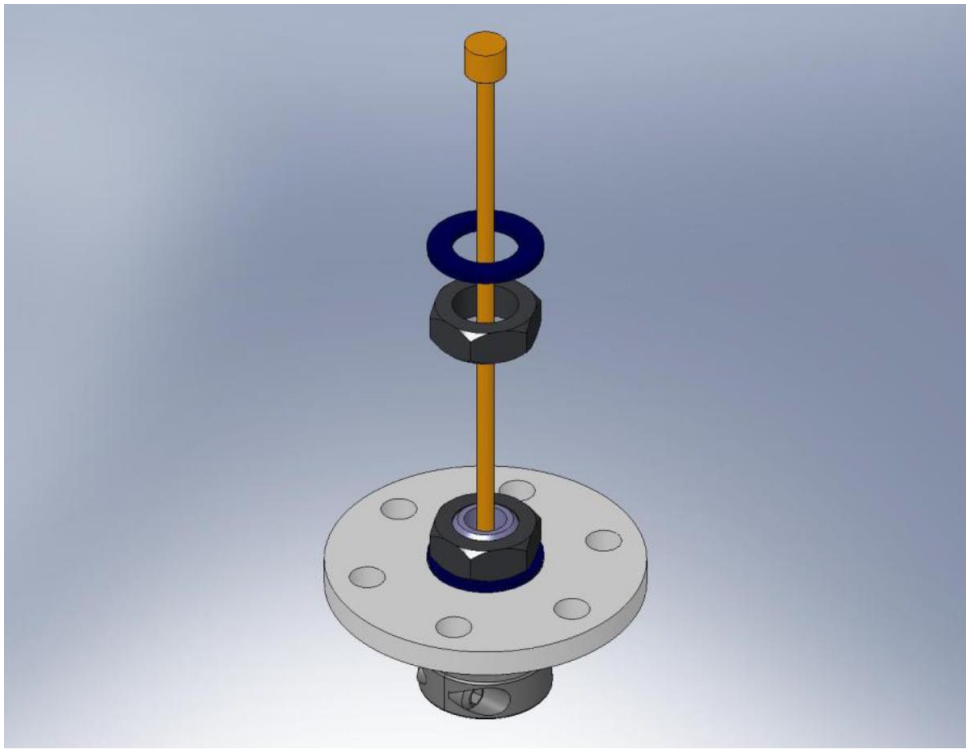
Pic 40

Snug all 7 screws on each Spring, then incrementally torque to spec.

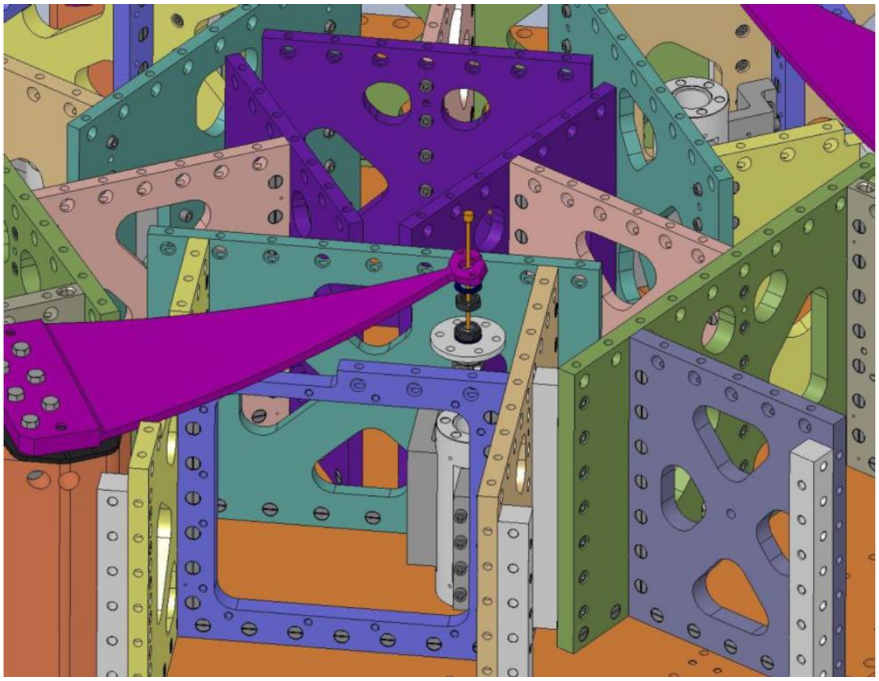


Insert 6 plastic Bushings in the Sus Stage, on either side of the 3 Flexure Bodies. BUSHINGS TO BUY

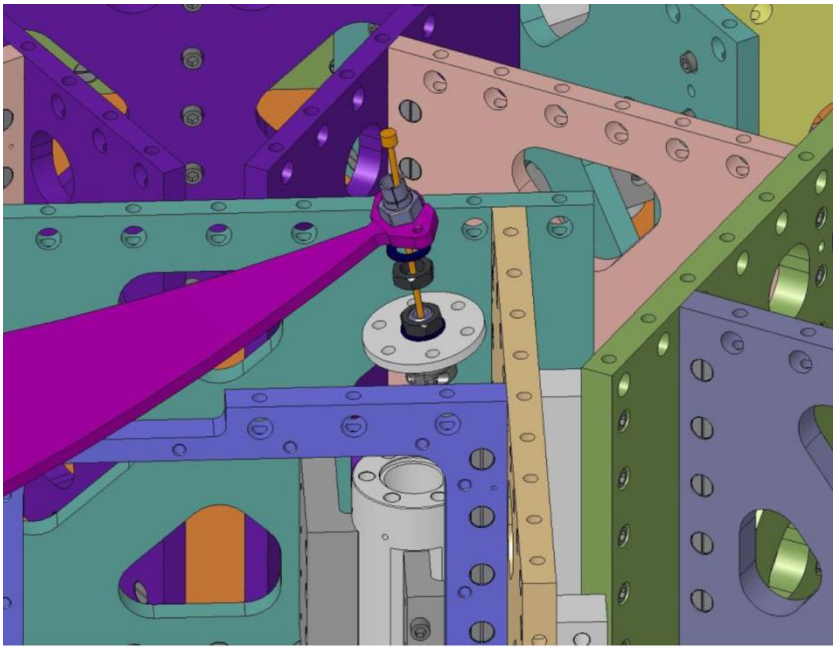
Slip a *M36 nut and washer* onto all 3 of the Flexure Mounts, as shown in Picture.



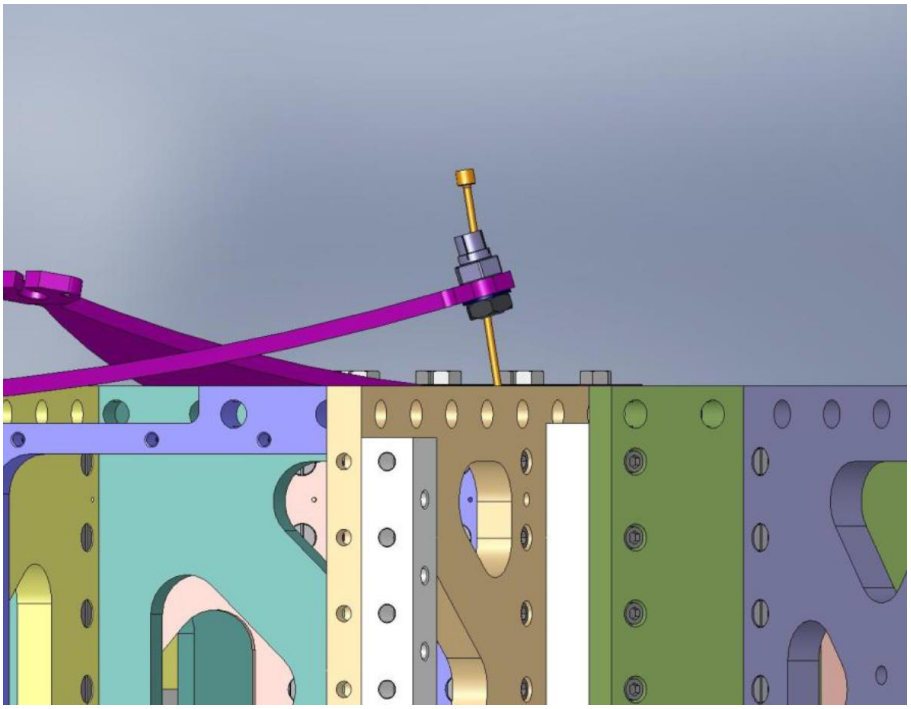
Pass a Flexure Assembly through the slot at the end of one of the Springs, as shown in Picture.



Slide a Flexure Mount over the top of the Flexure, as shown in Picture. Seat the Flexure Mount within the mating hole in the Spring.

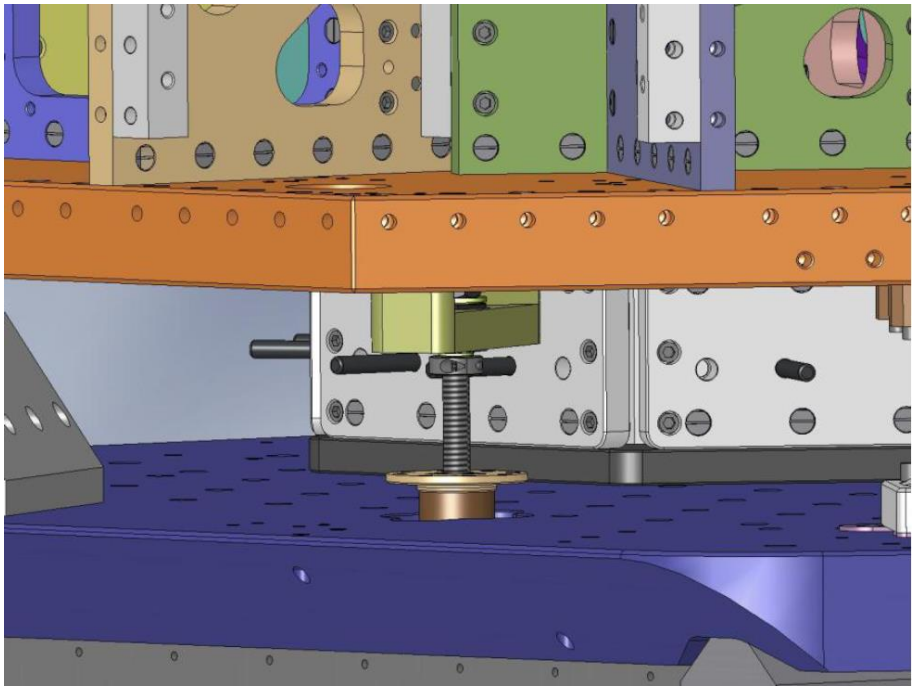


Screw the underneath nut onto the Flexure Mount, as shown in Picture. Make sure there is good contact between the Mount's base and the top of the Spring. Torque the nut to final spec.

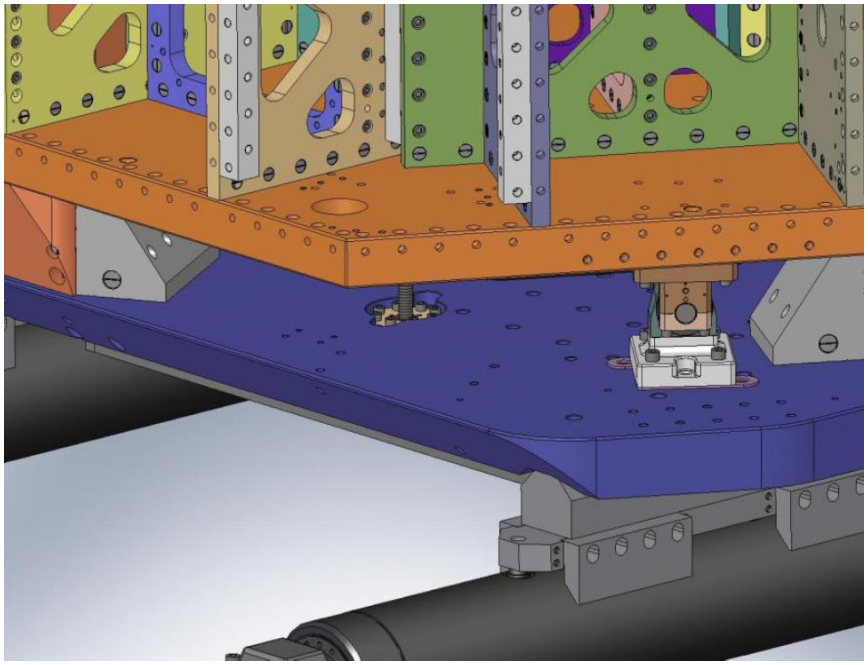


Place something (e.g., a twisted O-ring) between the top end of the Flexure and the inside of the Flexure Mount, to prevent the Flexure from seating. This reduces the risk of accidentally bending the Flexure when the Springs are loaded. WE NEED TO BUY THE RINGS

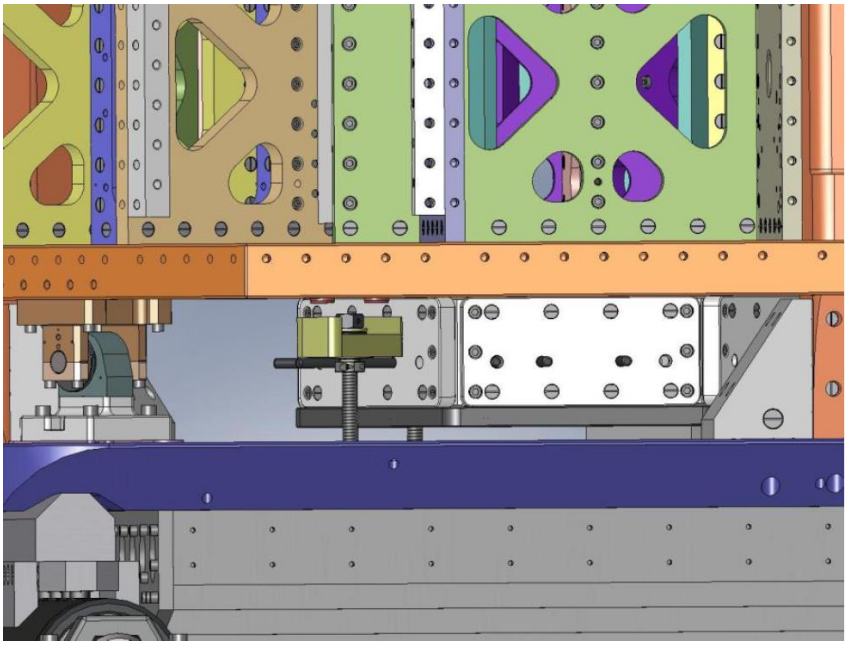
Move the 3 bottom parts of the Traction Plates Assemblies between the Gound Plate and the Sus Stage. Insert the Bases in the 3 matching pockets in the Ground Plate, as shown in Picture.



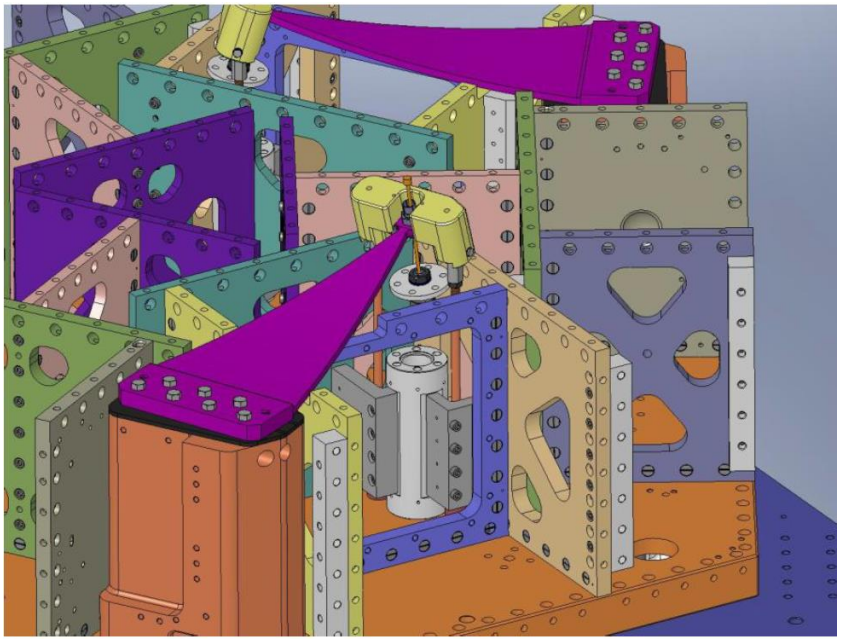
Place the *8 M8x40 screws* holding the Bases to the Ground Plate. Snug them all, then torque them to final spec.



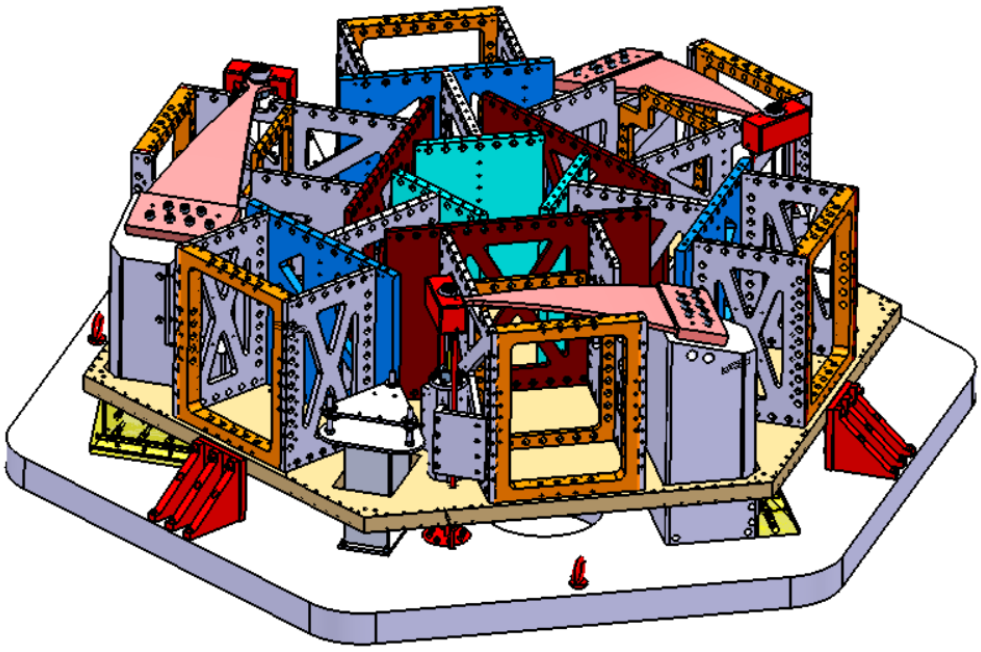
Unscrew the ACME screw until the Traction Plate is at about 10 cm from the Ground Plate.



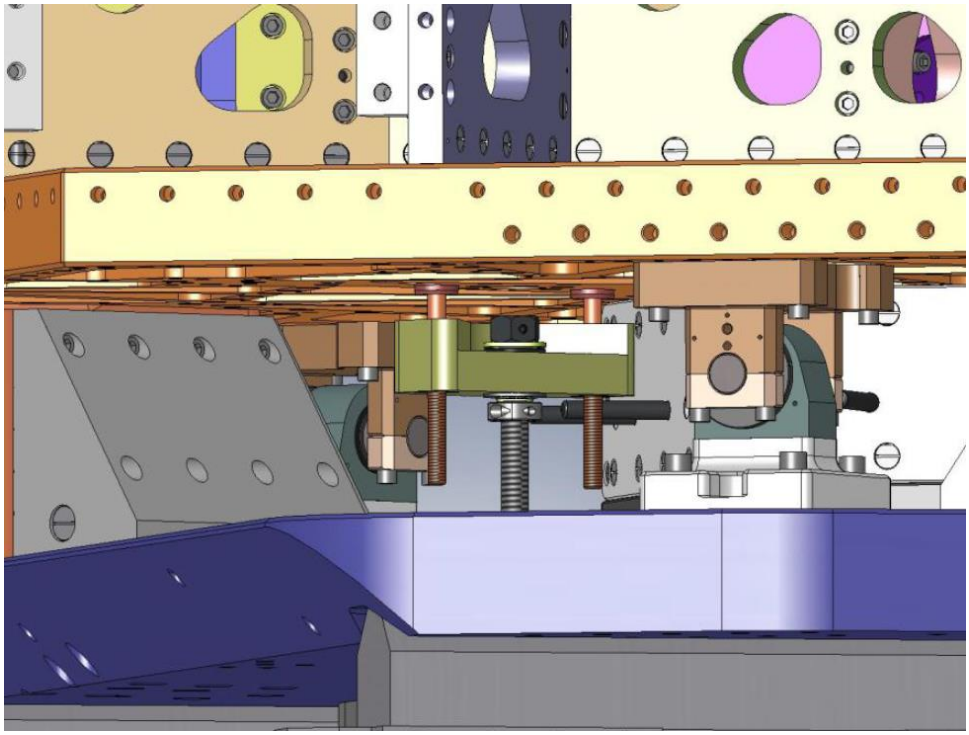
Lay the top parts of the Spring Top Part Assemblies on top of the Springs, as shown in Picture.



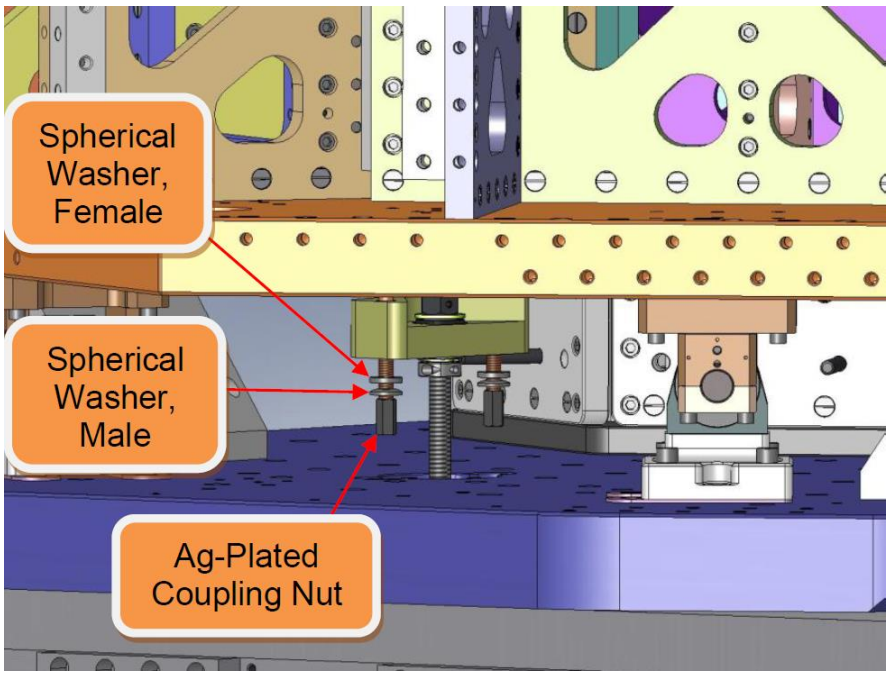
Carefully pass the ends of the Rods through i) the Spring Tension Bushings in the Sus Stage and ii) the Spring Bottom Plate, as shown in Picture. **1 person will insert the piece on the blade and in the holes of the Sus Stage, and 1 person is helping to insert the rods in the holes on the Bottom plate below the Sus Stage. Make sure that all the holes between the two stages are perfectly aligned before setting the rods: this can be done installing the supports between the two stages.**



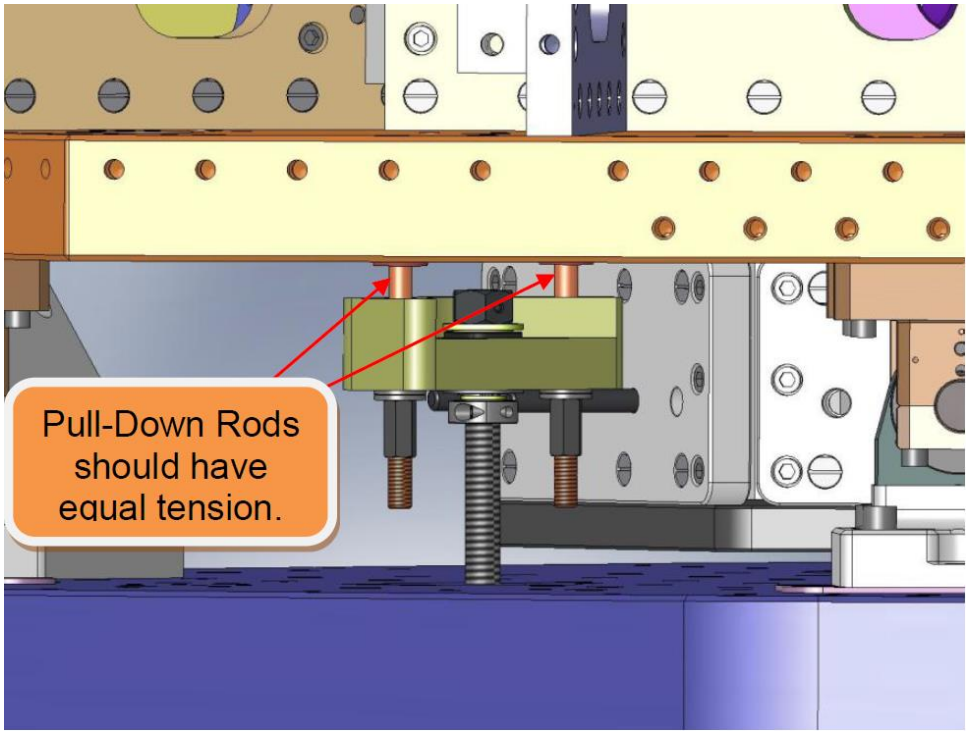
Do this work in parallel for all the 3 springs before moving on.



Screw on each end of the rods a *M8 steel levelling washer and a M8 steel nut.* **Do this work for all the 3 springs before moving on. Remove the lockers now, before moving to the next step.**

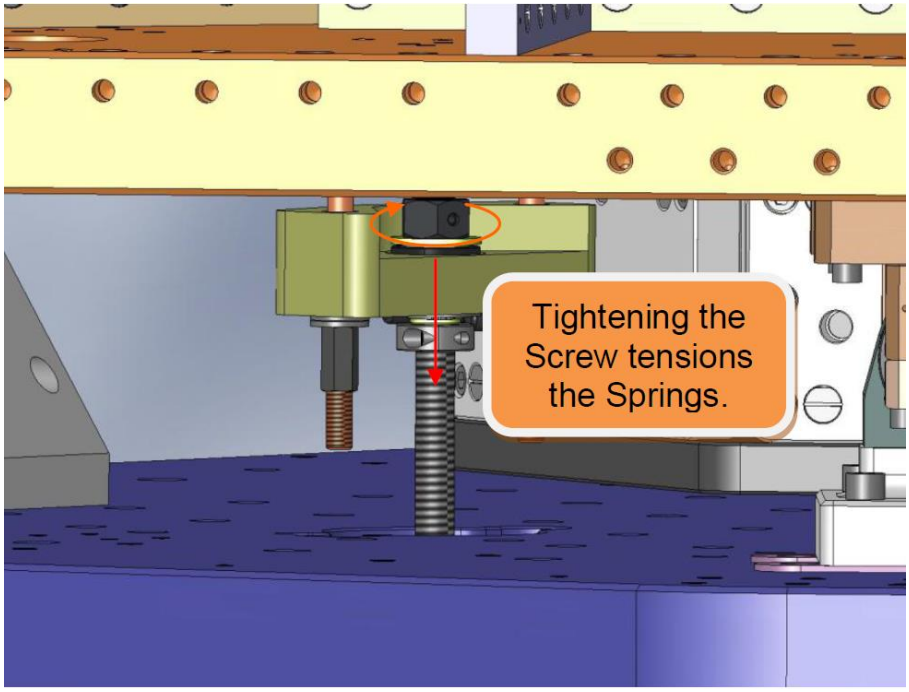


Tighten the nuts enough to cause a little tension on each Rod. Use equal torque for the 2 nuts on a single Bottom Assembly – this is necessary to avoid twisting the Spring during loading. Do this work for all the 3 Rod assembly.



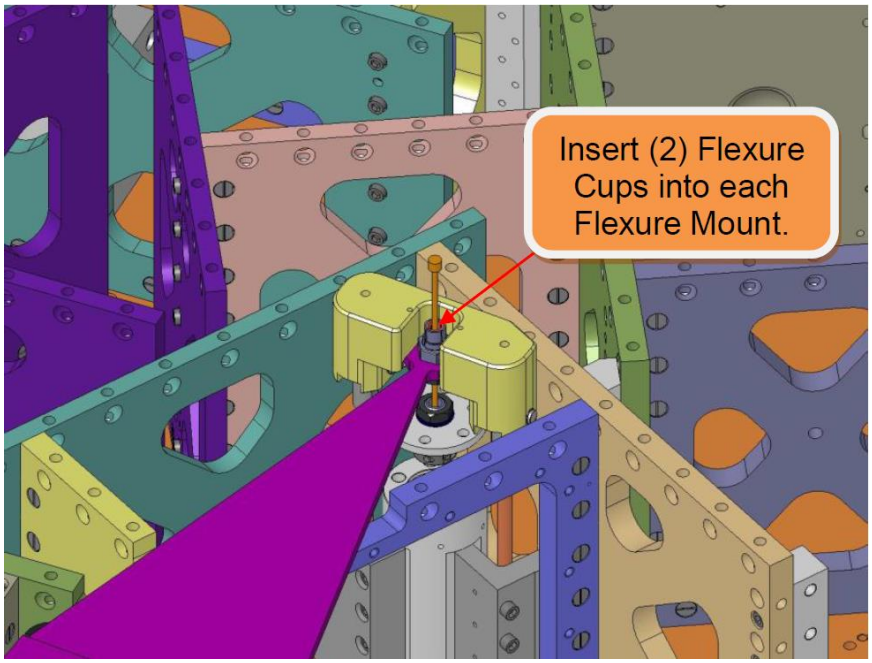
NOW WE START TO LOAD: DO THIS JOB WHEN YOU ARE SURE TO DEDICATE 1 FULL DAY, BECAUSE IT'S CRITICAL TO START AND FINISH TO LOAD ALL THE PARTS.

Using a ratcheting box wrench WHAT TORQUE? begin tightening all 3 ACME Screws in parallel, as shown in Picture. *As the load on each Spring increases, its shape will approach the final, flat profile.*

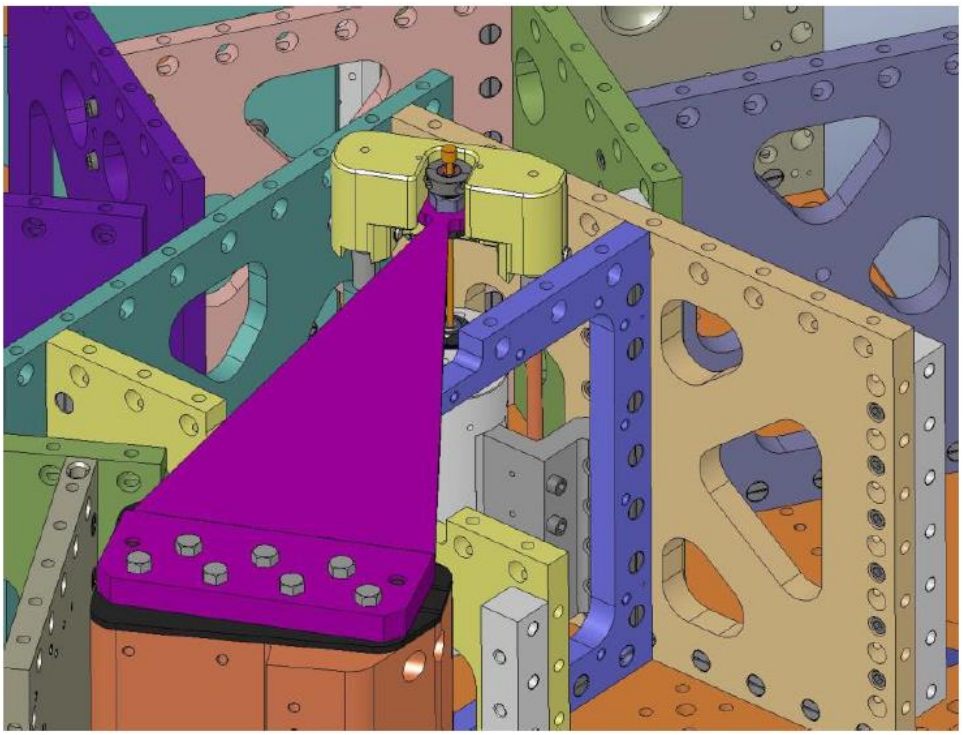


When loading the Springs, make sure that the Flexure Assemblies do not become wedged against anything on the Sus Stage. 3 people are needed for this job.

As each Spring approaches horizontal, remove the O-ring from its top Flexure Mount, and insert 2 Flexure Cups, as shown in Picture. *Try to align the Cups with the grooves in the Mount.*

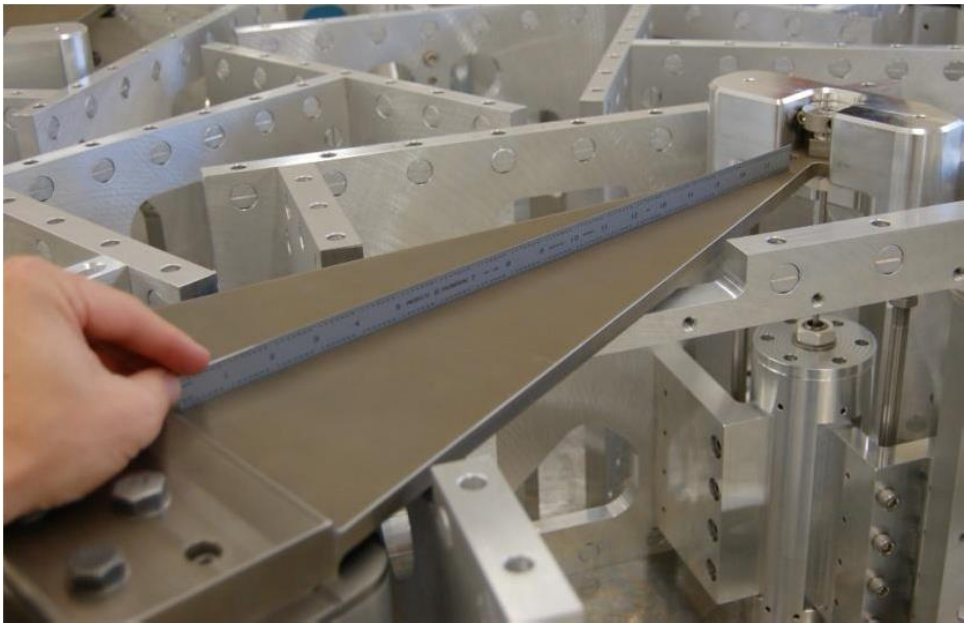


Place a Lock Collar with *silver-plated M4x6 screws* around the top of each Flexure Mount, as shown in Picture. Leave the collar loose, so the Flexure can slip in and out of the Flexure Cups without a lot of force.



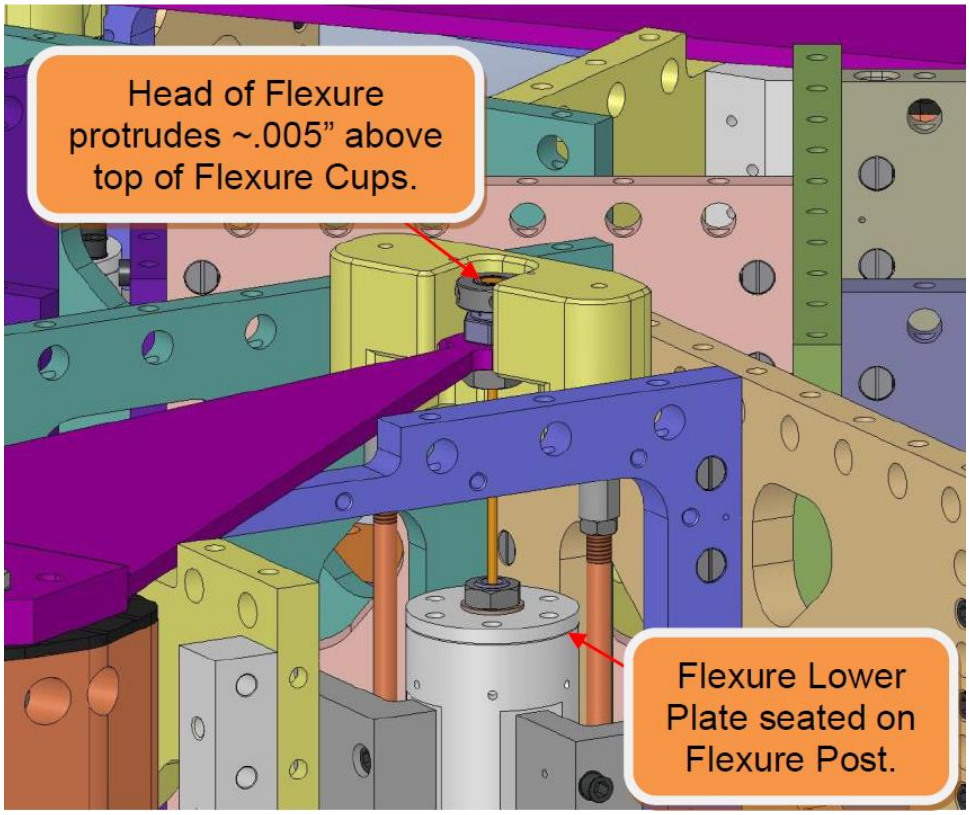
Hold the top ends of the Flexures above the Flexure Cups, while continuing to load each Spring. Place a straightedge on the Spring to check for flatness.

Adjust the tension on the Pull-Down Tooling, until the Spring is flat (to within~0.127 mm - 0.254 mm).

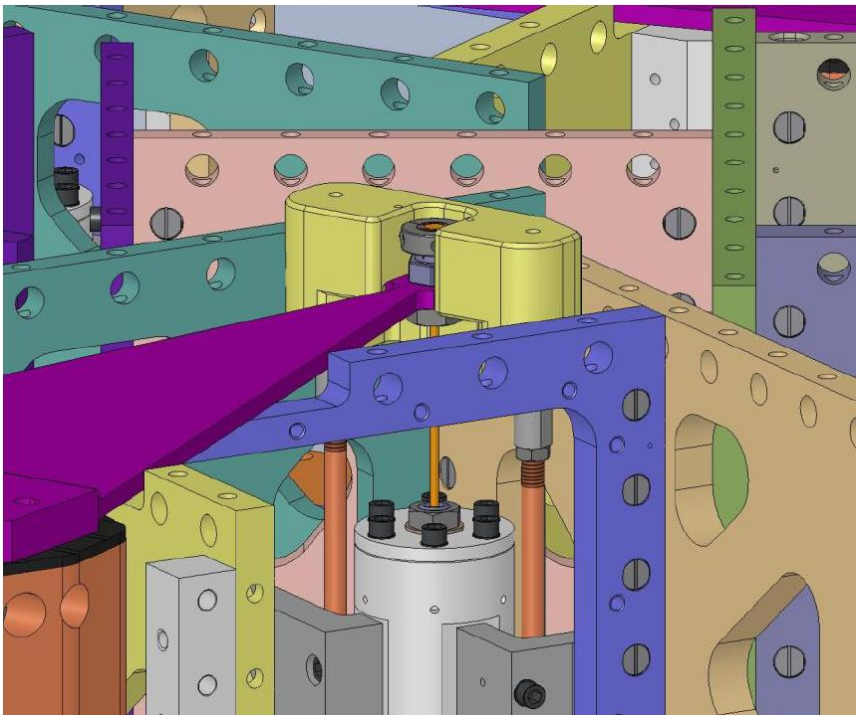


Carefully pull the Flexure into the Flexure Cups. Depending on the height of the Spring tip, either i) the Flexure will seat fully in the Flexure Cups, before the Flexure Lower Plate touches the Flexure Post, or ii) the Flexure Lower Plate will seat first.

Adjust the Spring tension until you can seat the Flexure Bottom Fixation Plate, with the top of the Flexure protruding about *0.127 mm* above the top Flexure Mount, as shown in Picture.



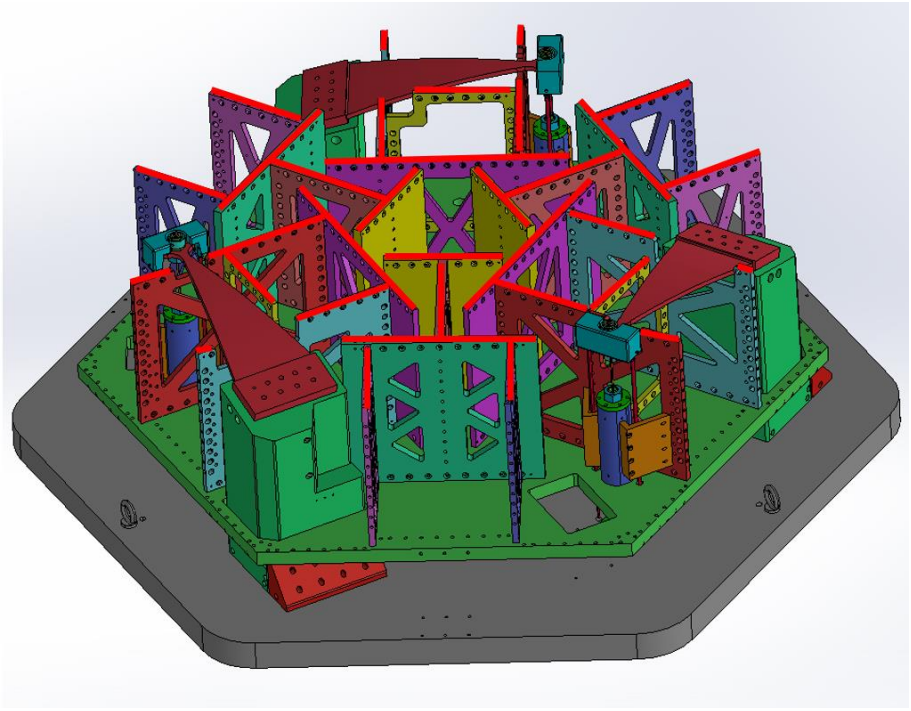
Screw the Plate with *6 M10 steel screws.*



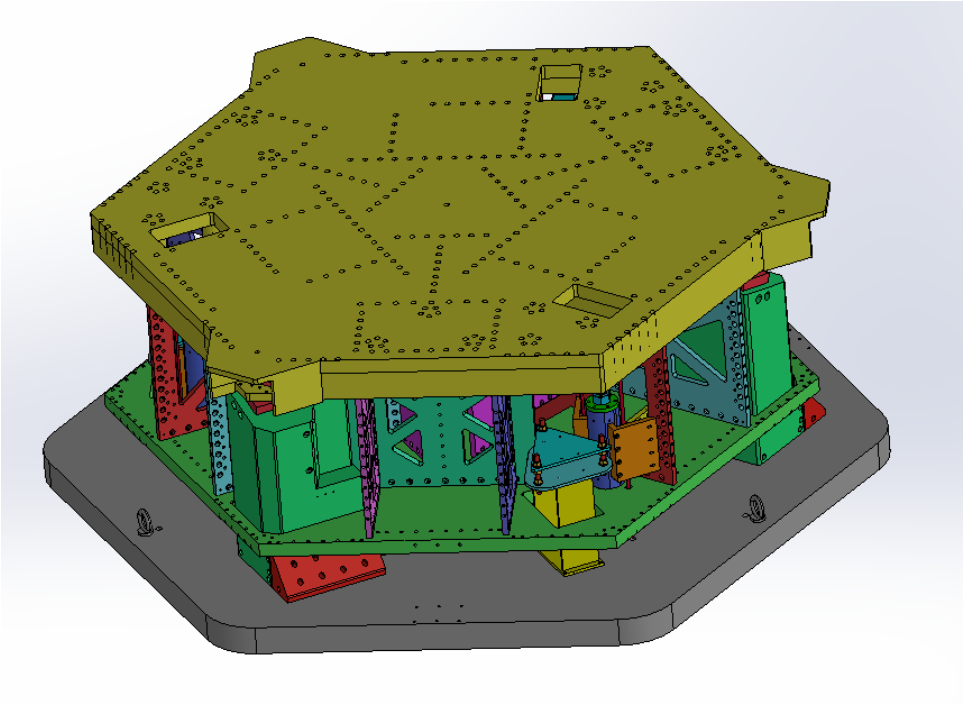
Before moving onto next step, all 3 Springs should be loaded and all 3 Flexure Plates should be bolted in.

7 Installing the Top Plate

Place *408 Barrel Nuts* in the openings along tops of Sus Stage Panels, as shown in Picture. Check that every tapped hole will be accessible after the Top Plate is installed. **Wipe out all the surfaces with isopropyl after this operation.**



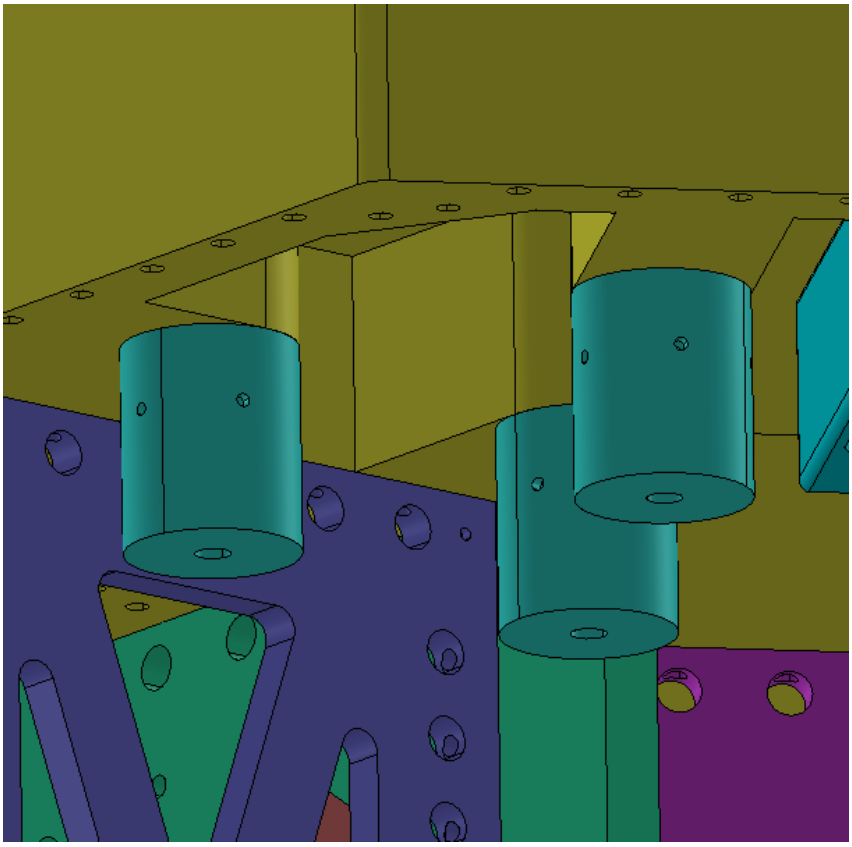
Lift the Top Plate with the crane and place it on the Sus Stage: follow the Pictures for the right orientation.



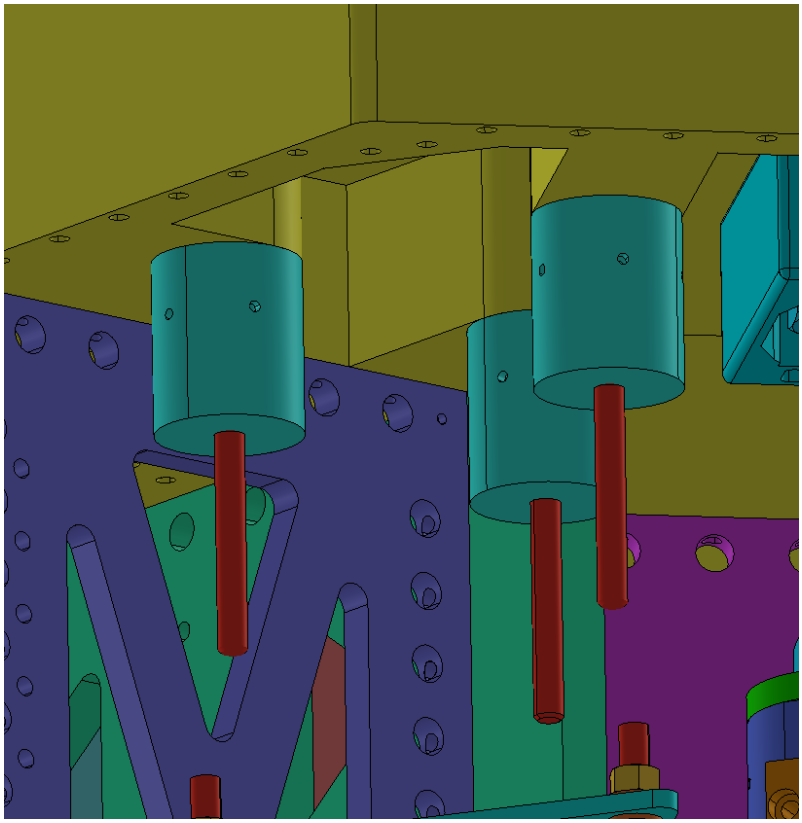
Screw the top plate with the *408 M10x70 screws from the top*. **1 person needs to step on the Top Plate to screw the internal screws. Wipe out all the surfaces with isopropyl after this operation.**

7.1 Installing Top Plate components

Install the 9 VAS Short Bodies, screwing from the top with *5 M8x40 steel screws* for each body as the Picture. **1 person will hold each body one 1 person will screw up.**



Insert a *M16x148 ACME screw* in each Body and screw an *M16 nu*t up to the Body base.

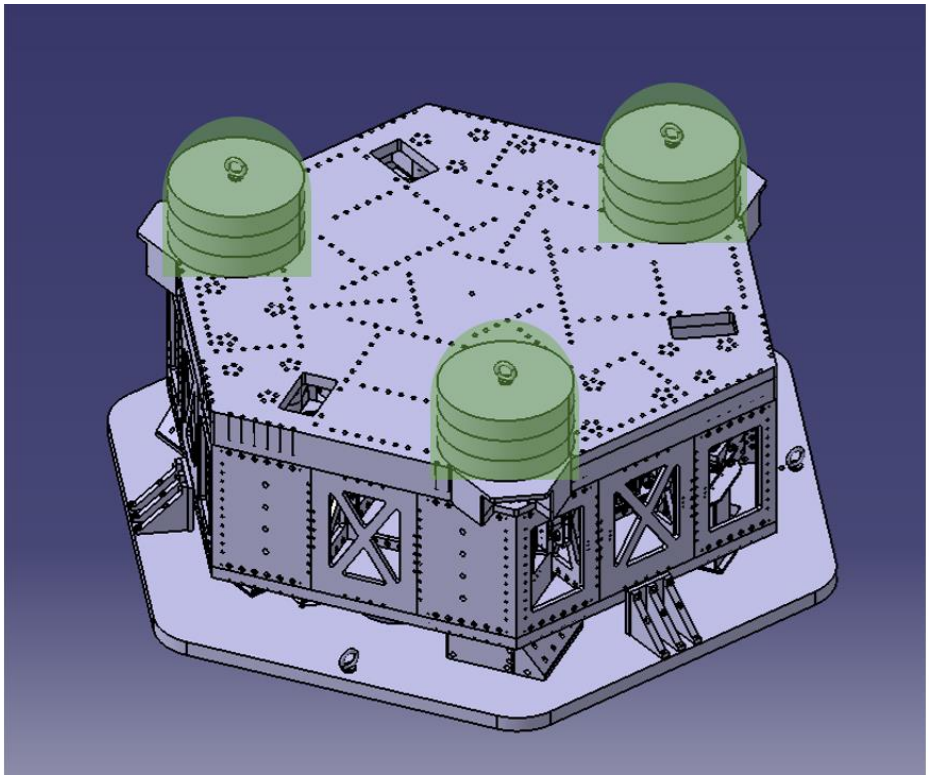


Install the 9 SS Bodies, screwing from the top with *5 M8x40 steel screws* for each body as the Picture. **1 person will hold each body one 1 person will screw up.**

Insert a *M16x148 ACME screw* in each Body and screw an *M16 nut* up to the Body base.

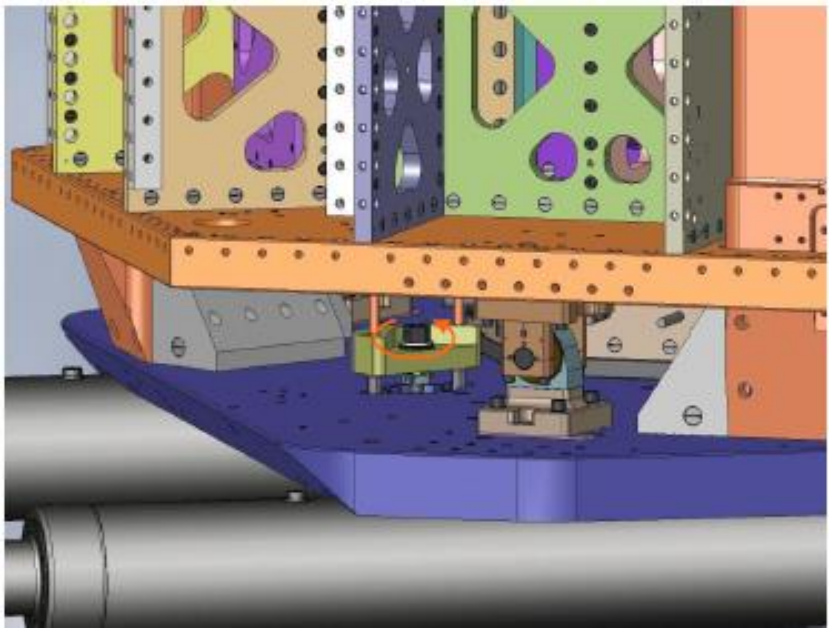
8. Applying the dummy masses

With the crane, apply *3x139 kg disks* on the top stage using the lifting rings, as in the Picture, for a total of 1251 kg. These masses will simulate the presence of the suspensions on top of the AP. ***They need to be as symmetric as possible, and they need to be placed one by one on each side. DO NOT add all three masses on a side before the others, this is dangerous!***



9. Removing the pre-loading assembly

Release tension from the 3 Spring Pull-Down Assemblies, **evenly**. Now, the Springs are pulling up on the spacers.



Unscrew the coupling nuts from the bottom of all the Pull-Down Rods. Remove the nuts and the spherical washers above them.

Pull the top part of the Pull-Down Assemblies up through the Top Plate.

Torque the silver-plated screws on the (3) shaft collars on the Flexure Mounts, to final spec.

Remove the (6) Spring Tension Bushings.

Unscrew the (3) ACME Screws from the Pull-Down Nuts.
Unscrew the mounting hardware for the (3) Spring Pull-Down Bases, and remove the bottom part of the Spring Pull-Down Assemblies from the ISI.
Move to long-term storage, along with top part and hardware. (Note: the Pull-Down Nuts are made of 660 Bronze, which is not vacuum compatible – they must be removed from the ISI.)

10. Aligning the AP

Place all the panels forming the frame on top of the Top Stage to take into account their weight.

There are additional dummy masses that can be added in case the AP needs to be adjusted in angle.

Now, check the tilt (if any) of the AP with the tool Inclinometer and adjust the tilt accordingly. Maybe at AMOS they have it...?

Now add again the 3 locks on the sides of the AP.

11. Installing the devices

Place the *2 M10_60x100 barrel screws* in the side holes of the Pillar as in the Picture.

Mount the Pillar T Plate as in the Picture with *4 M8x40 screws and washers*. Do it for all the Pillars.

Mount the 3 T Plates on the 3 VAS Triangular Supports with *4 M8x40 screws and washers.*

11.1 Pre-assembling the horizontal BOSEMs and coils

On a table, pre-assemble the horizontal BOSEMs and the coils. There are 3 First Plates and Pushed Plates: on each of them you ae going to mount 1 coil and 1 BOSEM.

Screw *3 M5x16 steel hex screws* in the Pushed Plate and the coil. **Make sure that the cable out of the coil is going towards the external side of the platform.**

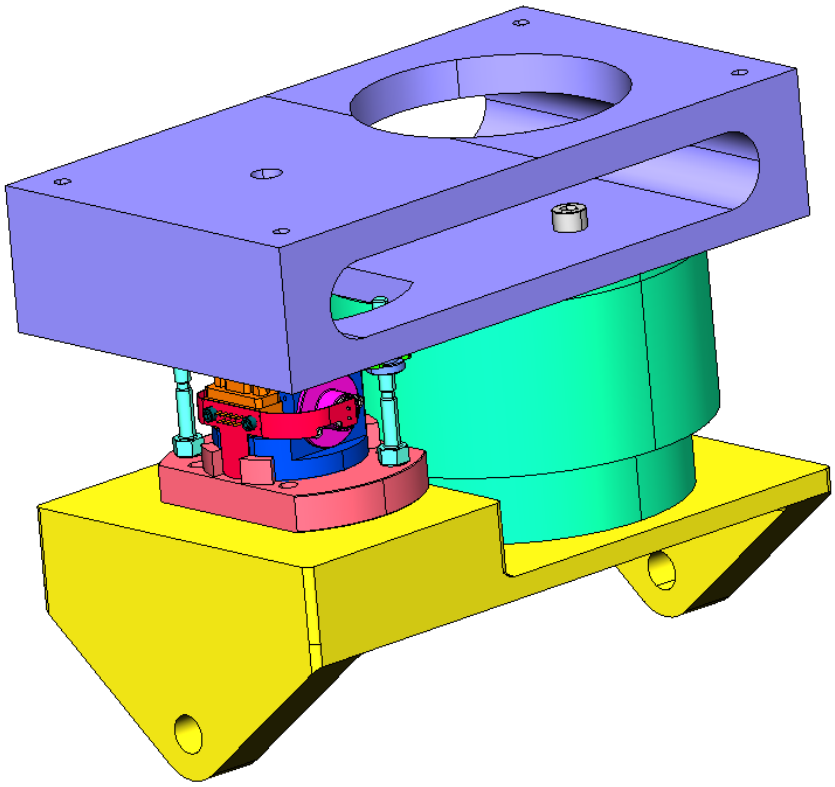
Screw the BOSEM flag with an *M4x8 screw* into the Pushed Plate.

Screw the BOSEM on the First Plate with *4 M4x35 screws.*

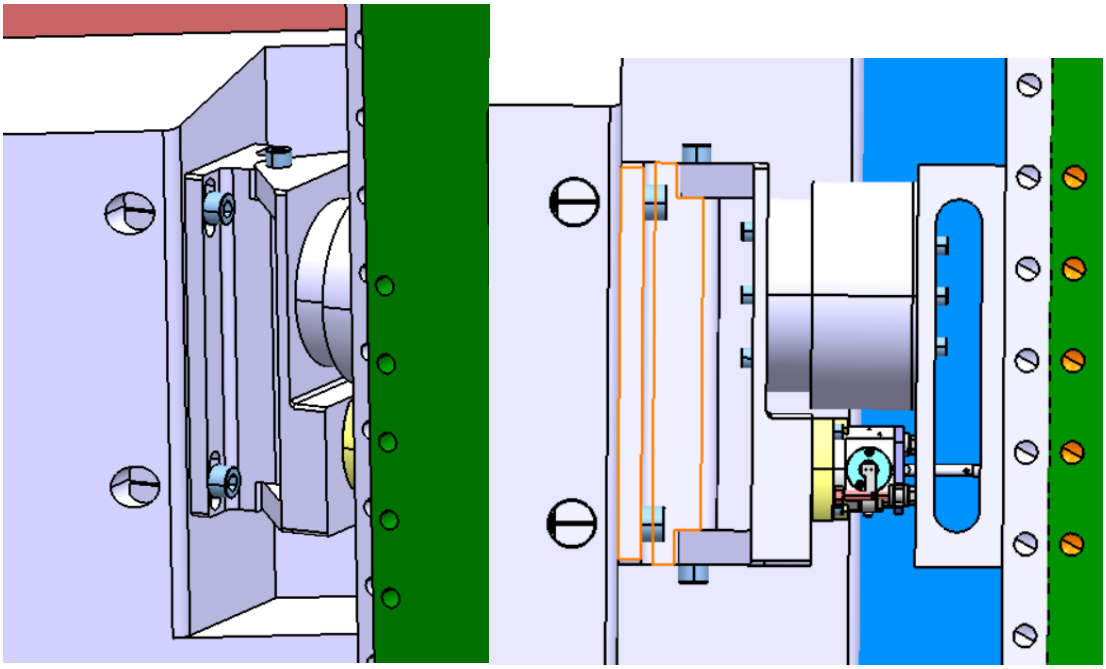
VERY CRITICAL PASSAGE:

Paying attention to not damage the BOSEM flag, put together the First and the Pushed Plates in order to be able to screw the other side of the coil on the First Plate with *3 M5x16 screws*. The BOSEM flag should enter in the BOSEM aperture without touching the edges.

Now the horizontal sensors and actuators are mounted as a rigid assembly. There are 3 of them.
Make sure to take care of the BOSEM.



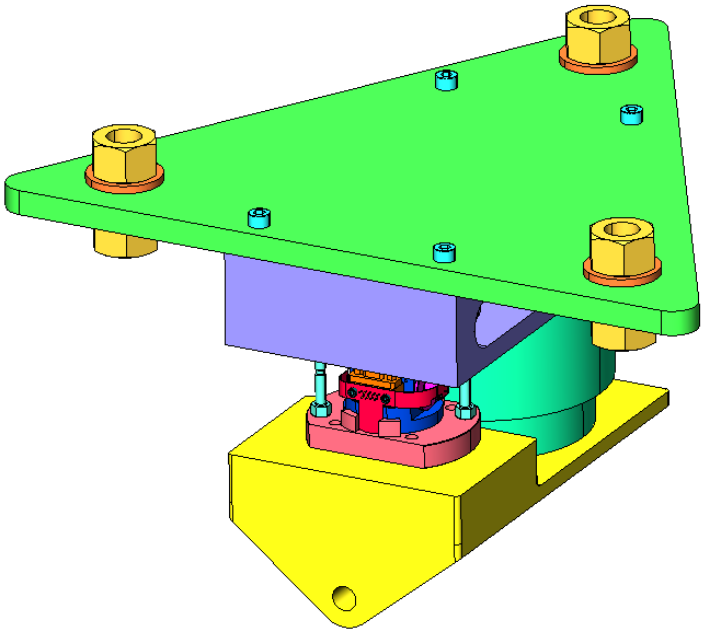
Carefully, place each assembly in the Sus Stage, between the Pillar and the panel: *2 people keep the assembly in place and 1 person will screw.* Screw the Pushed Plate to the panel with *4 M5x30 steel screw* and then screw the First Plate to the T Plate on the Pillar with *2 M8x25 screw*.



11.2 Pre-assembling and inserting the vertical BOSEMs and coils

Repeat the pre-assembling for the vertical coil and BOSEM as in section 11.1. **Make sure that the cable out of the coil is going towards the left or right side of the platform.**

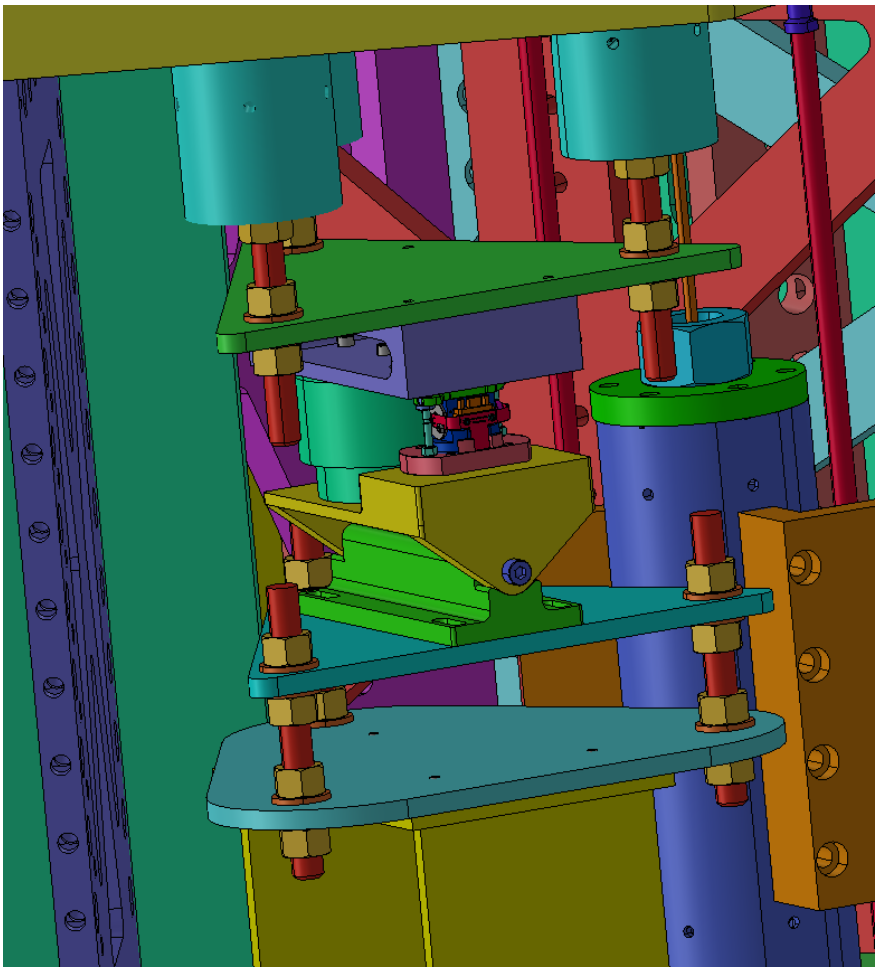
After, install the VAS Triangular Support Top to the Pushed Plate with *4 M5x30 screws.*



Insert *3 M16 steel nuts* and screw them at the highest point of the ACME screws in the VAS Short Bodies.

Carefully, install the vertical assembly devices inserting the Triangular Support Top through the 3 ACME screws in each VAS Short Bodies, placing a *M16 washer* between the Support Top and the nut. Apply another *M16 washer and nut below*, for each ACME screw and fix the structure stable on the Short Bodies.

Now the whole setup is above the Triangular Support and the T Plate. Carefully, unscrew the nuts on the Triangular Support Top to lower down the full assembly until it is possible to screw the First Plate to the T Plate. Use *2 M8x25 screws*.



Repeat for the other 2 sections.

12. Installing the Inertial Sensors

12.1 Pre-assembling the sensors on the platform

Pre-assemble the sensors on the SS Triangular Plate **TO BE DECIDED**

Carefully, install the assembled sensors on the plate, passing the holes of the Triangular Plate through the *3 ACME screws* of the SS Bodies, placing an *M16 washer before the nut.*

Fix the platform screwing a *M16 washer and a M16 nut* to a desirable height. **Make sure to screw the nuts evenly time by time, during the lifting, in order to keep the sensors, parallel to the Sus Stage floor.**

13. Connecting the cables to the devices

This is the moment where you insert the cables on all the devices. Connect each device carefully, making sure that the cable coming out is travelling as less as possible through the setup. Is it recommended that the cables will touch as less parts as possible. If possible, let it hang and travel only on the Sus Stage floor. Each cable needs to reach the dedicated flange.

INSTRUCTIONS FOR THE FLANGES TO ASK.

14. Installing the frame panels

Install the 6 Corner Links: slide each Corner Link in its place as in the Picture and screw it from top and bottom with *4 M10x25 Silver Plated screws*.

Install the 6 MT panels: place each of them in the middle window of each side of the Sus Stage. Screw *16 M10x70 Silver Plated screw* from top and bottom.

At each side of the MT panels where the blades are, install the External Counterweight panels see Picture). Insert *16 M10 Barrel nuts* in the top and bottom sides. Screw with *16 M10x70* from top and bottom. Then, screw also from the left and right ides with *16 M10x70 screws*.

The remaining sides at the MT panels of the Sus Stage (device sides) need to be covered with the External MT Vertical panels. Insert on the top and bottom sides of each panel *16 M10 Barrel nuts* and screw from top and bottom. Screw also on the left and right sides of each panel, with 1*6 M10 screws*.

In the central panel of each side, add the External Middle Cover panel. On the top side, 1 person will insert *4 Barrel nuts* from below and 1 person will screw with *4 M10x25 screws*. For the bottom side, 1 person is inserting the *4 Barrel nuts* from above making sure not to lose them from below, and 1 person will screw *4 M10x25 screws*.

Screw the sides of the Middle Cover panel with *10 M10x25 screws.*

The panels along the device sides of the Sus Stage are made in such a way that you are able to make the cables pass through easily, and reach the flanges.

CONGRATULATIONS, YOU HAVE SUCCESSFULLY BUILT YOUR FIRST ACTIVE PLATFORM!

15. Alignment and calibration

Supposed to be done:

- Install bosems, inertial sensors and actuators
- Level the platform ? move dummy masses ? it should be horizontal !

- Adjust the inertial sensors so that it corresponds to the position calibrated with Stewart Platform
- Measure B1/V1; B2/V2; B3/V3; same horizontally
- Adjust gain of transfer function so that they have the same DC values
- Actuator jacobian is known by design. + adjust experimentally using signals from Bosems
- Use DC values as COK jacobian or another strategy (modal, frequ. dep. Jacobian…)
- Multiply by the inverse of the Bosem jacobian in such a way that we have decoupled plant.
- Check that this is the case by trying to inject signals in different directions, and see that we inject zero motion in other directions
- Multiply each inertial sensor by the inverse of its dynamics (if Inertial sensors are not controlled)
- Compute transfer matrix from decoupled directions to outputs of inertial sensors
- Multiply the outputs of the inertial sensors by the inverse of that matrix
- Sensor fusion between cartesian relative motion and cartesian inertial directions