Braden Walker

Contact Information

- **Address:** P.O. Box 1436 Okc, OK 73101 **Mobile:** (405) 850-0119
- **Email:** bradenwalker555@gmail.com **LinkedIn:** LinkedIn Profile
- **Citizenship:** U.S. Citizen / DOB 4-5-1982 **Work Status:** ASAP, can relocate or remote, min $65/hr.

Education

- **The University of Oklahoma:** Norman, Oklahoma
  Bachelor of Science in Mechanical Engineering, May 2004.
  Overall GPA of 3.8/4.0 **Major** GPA of 3.84/4.0.

Engineering Work Experience

- **Zero Gravity Innovations, LLC.:** Oklahoma City, Oklahoma 2021 – Present:
  - ***Zero Gravity Innovations LLC 2021 – Present:*** Founder and Visionary. Working towards overall project integration of various other LLCs (several listed here) developing revolutionary synergistic business approach. Also working on several design concepts including, but not limited to, the following:
    - Zero Thickness Cell Phone Screen Protector. Using CREO V10/CATIA V5, V6 for CAD modeling & analysis for automotive component design.
    - Zero Gravity acoustics system improving resonant acoustic qualities.
    - Zero Pressure aerodynamic solution for reduced drag / improved MPG. Using CREO V10/CATIA V5, V6 for CAD modeling & analysis for automotive component design.
    - Zero Friction tire traction improvement reducing coefficient of friction & tire wear rates. Using CREO V10/CATIA V5, V6 for CAD modeling & analysis for automotive component design.
    - Solar panel design improving photo-electric potential energy efficiencies.
    - Developing new approach to particle/wave quantum theory with 4-D light optics.
  - ***Innovative Biological Implant Solutions, LLC. 2021 – Present:*** Continue product design efforts as well as in process of making design edits to resubmit patent including zero wear interface and enhanced polymer joint configuration (sliding poly configuration) to improve joint kinematics/dynamics. More details are provided on following page (2).
  - ***Sharps Terminator LLC. 2021 – Present:*** Working with various suppliers to ramp up for production product introduction, finalizing FDA approvals and current IP acquisition strategic project manager. Please also visit Sharps Terminator | SharpsAid, Inc. & Home Page - RxWorkz
  - ***Unified Pictures 2021 – Present:*** Working with various investors on capital acquisition and strategic deployments of licensing agreements to sale animation platform.
  - ***Revolutionary Communications, LLC. 2021 – Present:*** Finalize real-estate business acquisition and future project planning for both small & large-scale commercial applications.

- **Pratt and Whitney:** Tinker Air Force Base Midwest City, Oklahoma 2007 – 2021:
  - ***Senior Repair Development Engineer 2007 – 2009:*** Developed new repair technologies and technical data. Used Unigraphics-NX various versions. Repairs included various welding types (laser, GTAW, EB, Linear Friction, etc), plasma spray, detail replacements, brazing, machining (single point bore, conventional & non-convention milling, reaming, drilling, grinding, etc.), waterjet strip, shotpeen, coating strip and recoats, blends, hydraulic systems etc.
  - ***Senior Staff Engineer & Design Integration Lead 2009 – 2014***: Developed more complex repairs and began leading teams as well as continuous process improvement projects to reduce repair development turn times also reviewing and approving technical data.
  - ***Senior Staff Part Family Lead (TEC/Aug/Nozzle Systems) 2014 – 2017:*** Supported TF33, F100, F119, and F135 military jet engines. Responsibilities include leading the repair design team for the Turbine Exhaust Case, Augmentor, and Nozzle module systems of the engine by overseeing and leading junior engineers during repair development activities and reviewing, approving, and signing off on technical data providing overall technical leadership and systems integration guidance. Also responsible for approving design configuration changes, technical data modifications, limit expansions, and non-conformances (MRBs) on the shop floor. Nozzle module system also involved hydraulic actuation system integration for flight performance characteristic monitoring specifically in relation to aftermarket repair approaches.

- ***Senior Staff Part Family Lead (Mechanical Systems) 2017 – 2019:*** Supported TF33, F100, F119, and F135 military jet engines. Responsibilities included design integration of engine hydraulic systems as well as various fluid flow studies to ensure proper component performance and cooling characteristics and specifications were met for repaired parts without reducing component design life.
- ***Depot Design Lead 2019 – 2021:*** Job responsibilities similar to prior role except responsibilities extended to all engine modules and models within military application. Worked as the key technical focal for all of Tinker AFB issues both with internal and external customers. Worked extensively with USAF engineering senior leadership to determine best repair approaches and negotiate overall technical integration strategies for future and current repair development activities including cost reduction approaches. This encompassed design and structures systems integration as well as technology development integration both internal to P&W and external USAF customer. Provided real time signature authority (MRBs) for engineering disposition of parts on shop floor involving non-conformances across all components fracture, life-limited & rotating components.
  Lead the Oklahoma City Operations Team (consisting of approximately 45 engineers) both from a technical integration and strategic perspective while providing mentorship and tactical leadership as necessary.
- ***General Knowledge*** – Have extensive experience in both fracture and LCF characterizations, FEA, material analysis, heat treating, exotic material analysis and selection such as various Ti and Ni alloys, and 2-D GD&T drawing creation, interpretation & modification.

- **Innovative Biological Implant Solutions LLC:** Oklahoma City, Oklahoma 2011 to Present:
  - ***Lead Engineer, and Co-Founder*** worked in the new product development department. Responsibilities included developing and designing innovative and novel new products for the orthopedic surgical design space using CREO + ANSYS + Pro-Mechanica Motion.
  - Primary designs included several joint replacement arthroplasties for foot/ankle application including both implants as well as surgical installation procedures, alternate screw fixation which also preserves joint range of motion and an arthroscopic device with a full 3D articulating tip plus jaw actuation with single hand control.
  - Worked with legal to protect Intellectual Property, raising capital to fund various projects, working with the FDA for device classifications, building a team of exceptional employees with a wide range of expertise and backgrounds, leading the product development department and creating initial design boundary conditions such as materials, manufacturing processes, joint kinematics and dynamics, static and dynamic loads, working with vendors around the world to develop working prototypes and refining designs through CAD and FEA.
  - Developed overall business strategies and financial plans to support conception to mass production phases. Also involved in creating and submitting a grant application for a solicitation of the NIH for Small Business Innovation Research (SBIR) Grant Applications.

- **Motorola:** Libertyville, Illinois 2004 to 2007:
  - ***Staff Mechanical Design Engineer*** in Mobile Devices (cell phone design) responsibilities included product design from concept to mass production, project management, mass production trouble shooting to improve processes and reduce cost, implementing Six Sigma design using statistical process control, performing complex system level Tolerance Analyses with Monte Carlo simulations to refine designs, etc.
  - Manufacturing techniques used to create designs generally included metal die-casting, plastic injection & compression molding, sheet metal design, circuit and flex design and die cutting as well as using top-down advanced surface modeling techniques using Pro/E. Onsite supplier support required during new product development and launch to locations all around the world.
  - Some designs included a LCD zinc die cast frame, injection molded plastic chassis housing as well as various plastic part designs, stamped AL flip outer housing, slider mechanism, cameras, thin metal keypad, cameras and camera packaging, and acoustic architecture design layout.

Computer and Technical Skills

- Six Sigma Black Belt Training, Power Point, Microsoft Project, Excel, Minitab, MatLab, MathCad, Unigraphix-12 NX, CREO, Solidworks, CATIA, ANSYS, CFDRC-ACE+, Pro Engineer, and Pro Mechanica motion, structure, and thermal.
- Technical report and grant writing, failure analysis, SPC, DOE, FMEA, new product design, plastic injection molding part and tool design, advanced surface modeling and 3D CAD techniques and creating drawings using ASME Y14 specifications.

Affiliations and Honors

- ASME, SAE, Formula SAE Race Team, *Pi Tau Sigma* National Engineering Honor Fraternity, *Phi Sigma Pi* National Honor Fraternity, and The *National Society of Collegiate Scholars.*
- Won First Place in the Formula SAE 2004 Continental Brake System's design competition. Design including brake rotor and caliper as well as hydraulic systems integration. Goal was to optimize braking system performance for driver during competition for coupled heat and brake performance balancing peddle braking pressures.

References

- **Dr. Harold Stalford (professor):** email: Harold.stalford@gmail.com, cell phone: (405) 818-5618
- **Noah Eubanks (previous co-worker):** email: Odellnoah@gmail.com, cell phone: (405) 650-8655
- **Jared Calhoun (previous student):** email: Jarrod.c.Calhoun@boeing.com, cell phone: (405) 274-6030
- **Juan Nazario (previous co-worker):** email: juangnazario@gmail.com, cell phone: (787) 431-0792
- **Gordon Cuthbertson (previous co-worker):** email: Cuthbertson.g@gmail.com, cell phone: (860) 970-5952

VISUAL RESUME

Introduction to Braden Walker

- Graduated from The University of Oklahoma in 2004 with B.S. ME 3.84 GPA
- Started Working at Motorola 2004-2008 as Product Design Engineer
  - Individual Contributor Engineer 2004-2006
  - Staff Engineer 2006-2008
- Pratt & Whitney 2008-2021 (14yrs) Various Roles
  - Individual Contributor Design Engineer 2008-2011
  - Design Lead 2011-2013
  - Tech/Aug/Nozzle Part Family Leader 2015-2017
  - Mechanical Systems Part Family Leader 2017-2019
  - Depot Lead / Chief Engineer 2019-2021
- Founded Innovative Biological Implant Solutions, LLC 2011-Present
  - Various Designs and Patents (to be discussed in more detail)
- Founded Zero Gravity Innovations, LLC 2021-Present
  - Company Integration Approach + Innovations

Introduction to Braden Walker

"*I Like to*":

This is Me!

Cook

Play Guitar

Design Things

Mountain Bike

Fly Model Airplanes

5/14/2024

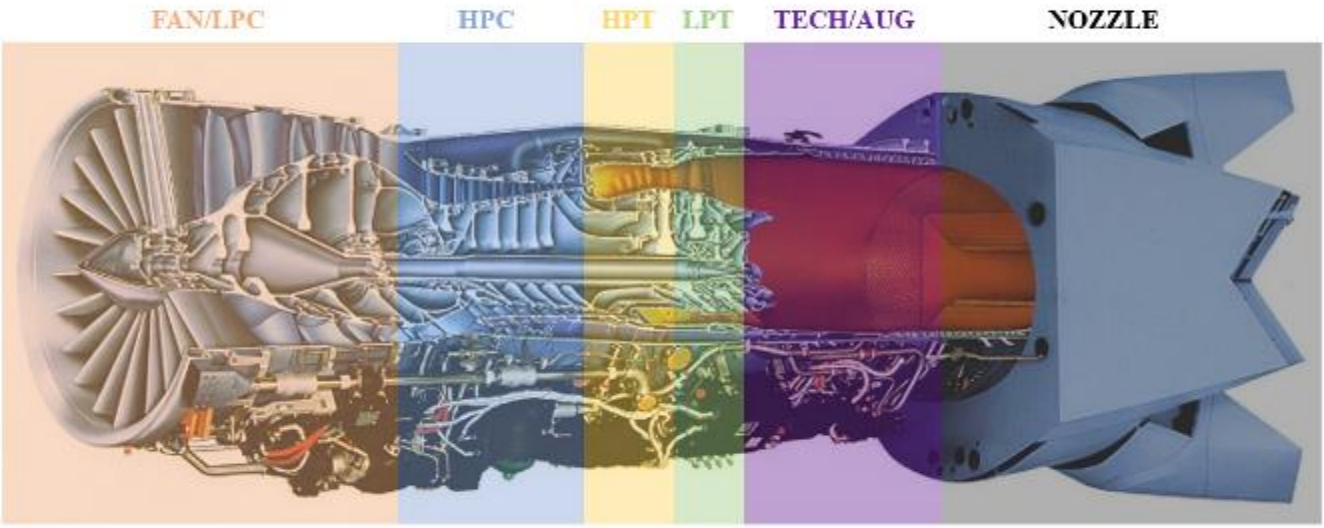
5

F119 Engine & Weapons Systems Overview

5/14/2024

6

F119 Engine Module Break Down



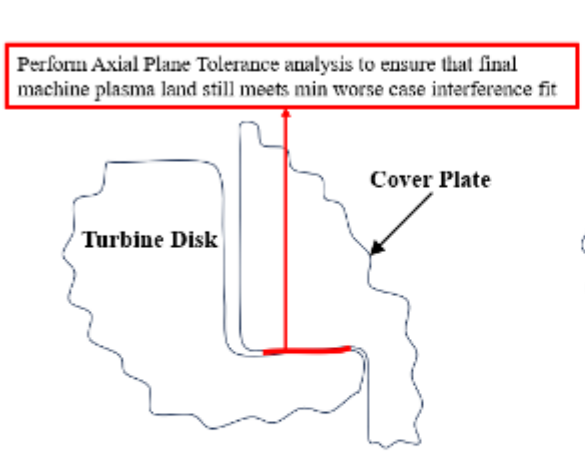
F119 Typical Repair Design Considerations

Snap Diameter Repair Approach & Design Considerations:

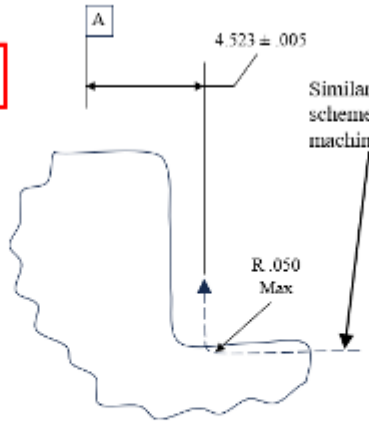
- Perform tolerance stack in axial plane to determine grit blast and plasma spray zone with optional and incomplete zones to maintain component interface fits both piece part and assembly stack.
- Perform diametrical tolerance stack to maintain fit ranges.
- Perform machining analysis to determine what machine cut needs to be made to remove all damage and maintain fits.
- Perform LCF analysis taking into consideration 4X life debit associated with grit blast as well as pre-machine geometry.
- Perform stress analysis of pre-machine radius.
- If LCF shortfalls need to peen.
- Fracture critical parts must meet both LCF/HCF & fracture independent.
- Perform vibration study to ensure no resonate coupling.
- Look at TMF and other anomalies associated with part environment such as hydrogen embrittlement/constituent pick up during machining.
- Ensure aerodynamics are not impacted.
- Determine microstructural requirements for final machine state based on parent material.
- Determine coating application for part interface/wear characteristics; consider plating.
- Ensure assembly/disassembly will not impact coating at final machine min/max (number of assembly/disassembly events based on intervals and life extension potential).
- Review drawing for all final requirements include Precipitation Hardening, if necessary.
- Ensure piece part and system balance, no impact.
- Look at configurations as well as life extensions and maintenance intervals.
- Design associated tooling/fixture and determine machining process to qualify vendor.
- Ensure repair cost does not exceed 20% part cost.
- Right detailed repair instructions and deliver to customer for execution and qualification (material/[process eval, etc.).

Rotor Stack

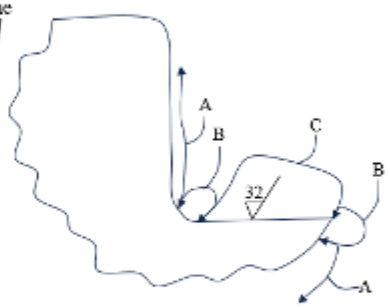
Typical Snap Diameter Repair



Typical X-Section for Snap Fit



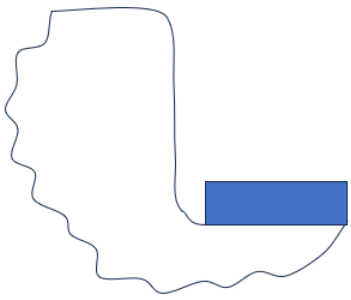
Typical Pre-Machine Path



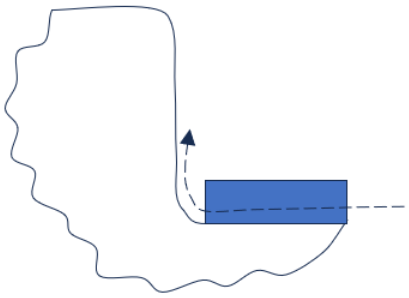
Grit Blast & Plasma Spray Requirements

A = No Grit Blast/Plasma Spray Allowed (per LCF/FM analysis)
C = Grit Blast/Plasma Spray Required (per tolerance stack analysis + LCF assessment)
B = Grit Blast/Plasma Spray Optional or Incomplete (masking & process tolerance)

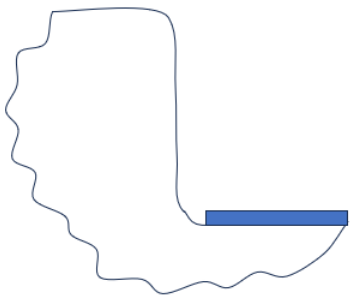
Typical Snap Diameter Repair



Plasma Application



Machine Pass



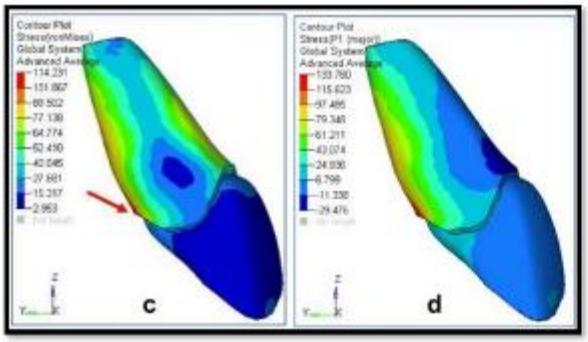
Final Machine

Typical dimensional requirements include:

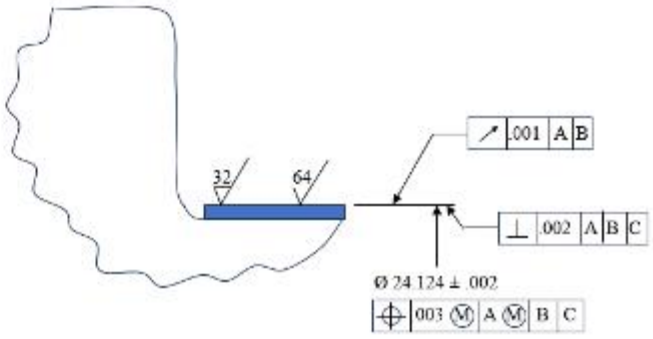
- True Position within +/- .003 inch
- .002 inch flatness in constrained states
- .005 inch in unconstrained state
- Runouts of .002 inch
- Perpendicularity of .005 inch
- Diametrical Size Control of +/- .003 inch
- Surface Finish of 63 Ra
- Optional Plating
- Optional Shotpeen for improved LCF
- Edge Break .030 max

Typical Snap Diameter Repair

Stress Plot Example



- Stress numbers are converted to both LCF and Fracture numbers which are a function of engine maintenance intervals and engine TACs.
- Part has design life and engine performance TAC life.
- For fracture critical parts, part must meet both engine performance LCF & Fracture.
- If there are Fracture shortfalls, high LCF into HCF can be used to compensate determining model accuracy and part operating environments



Final Machine – Dimensional Requirements (Example)

Motorola Izar Flip Phone Design Summary

Component Design List:

- Cameras & Camera Packaging + alignment performance of +/- 1 degree tolerance.
- Design centric would take components from napkin sketch to mass production.
- Laser cut glass lenes X 3 + second surface decoration.
- Aluminum formed, stamped, cut, spun & anodized flip outer housing.
- Plastic Injection molded inner chassis + Thermal Bonding to Al Housing.
- Injection molded Camera grommet also used for ESD/EMF protection.
- Flex circuit design + connectors with trace layout.
- PCB Layout & design integration.
- Cast Magnesium Housing.
- Tolerance Analysis using Worse Case, RSS & Montecarlo simulation both piece part and assembly level to ensure proper form/fit/function.
- 2-D drawing creation for all components.
- Used Six Sigma statistical process control tools for both process creation as well as process control.
- All parts and phone was tested for thermal shock (hot/cold), drop to failure, dust, acoustics, actuation, ballistics, dynamic shock and cycle fatigue/wear.
- Manufacturing techniques used to create designs generally included metal die-casting, plastic injection & compression molding, sheet metal design, circuit and flex design and die cutting as well as using top-down advanced surface modeling techniques using Pro/E.

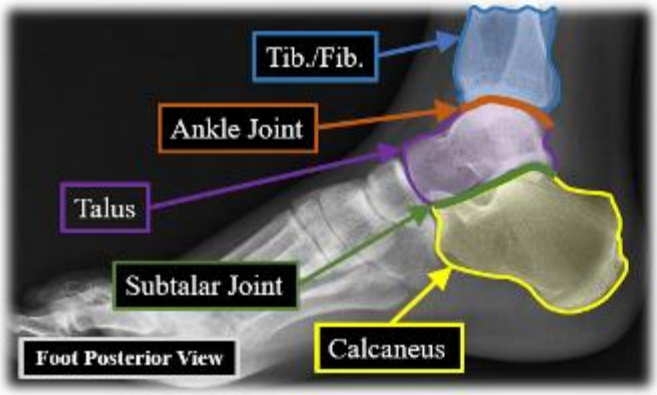
A New Patent Pending Approach to Subtalar Joint Arthritis

Innovative Biological Implant Solutions LLC
Copy Right

Braden Walker, BS ME
Dr. Vytautas M. Ringus, MD
Dr. Luis Neves, PhD Bioengineering

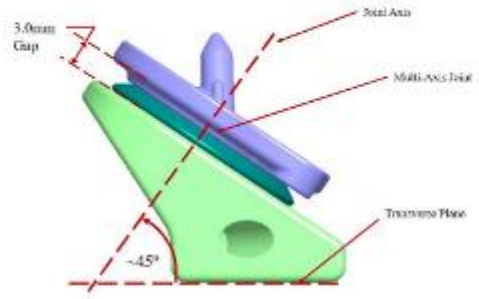
- Subtalar Joint Replacement Clinical Applications:
  - Idiopathic (spontaneous arise from an obscure or unknown cause)
  - Inflammatory (disease related)
  - Post Traumatic (injury)
  - Compensatory (poor gate)
- Relatively Common
- Altered Kinematics of Joint from Adjacent Arthritis
- Current Treatment Approaches:
  - "Live with it"
  - Injections
  - Arthroscopy
  - Fusion
- Currently there are no Joint Preserving Options for Patients:
  - Difficult multiplanar motion replication
  - Difficulty with installation
  - High weight to surface area ratio
  - Similar to all of the problems encountered with the ankle joint
- Ankle joint set as benchmark Design: — — — →
  - STAR results at 5 years 85-90% survivability 80-85% at 10
  - Improved indications, surgical technique and materials
  - Unique application of a 3-piece semi-floating poly design

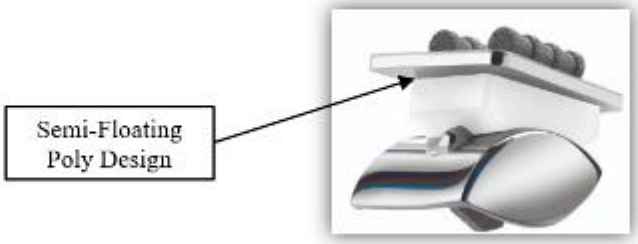
Ankle Joint = Tib. + Talus & **Subtalar Joint** = Talus + Cal.



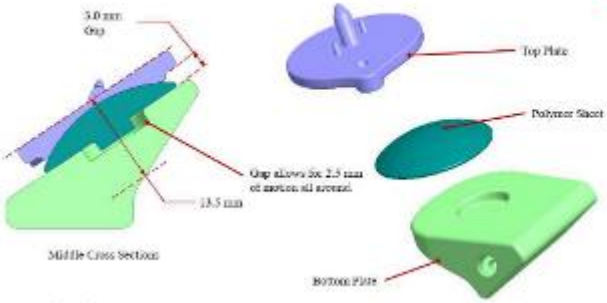
5/14/2024 15

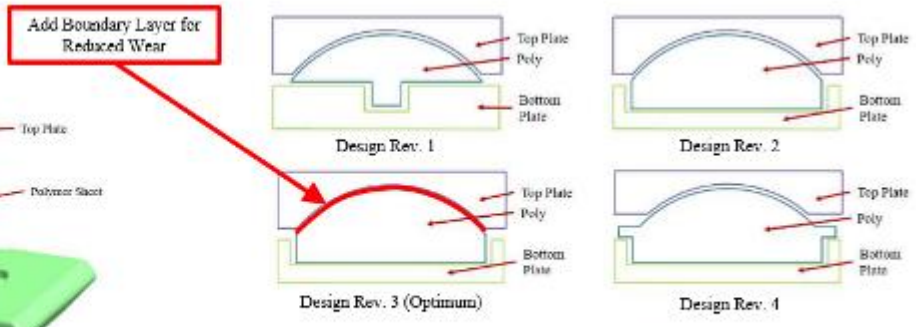
Design Overview & Competitor Comparison





STAR Ankle Joint Replacement

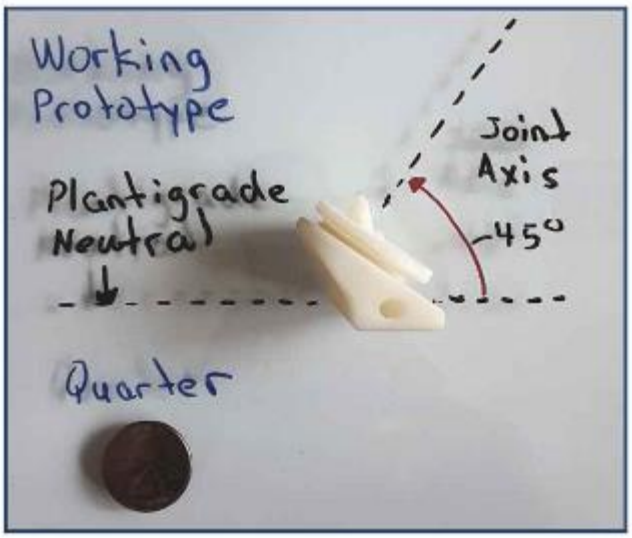


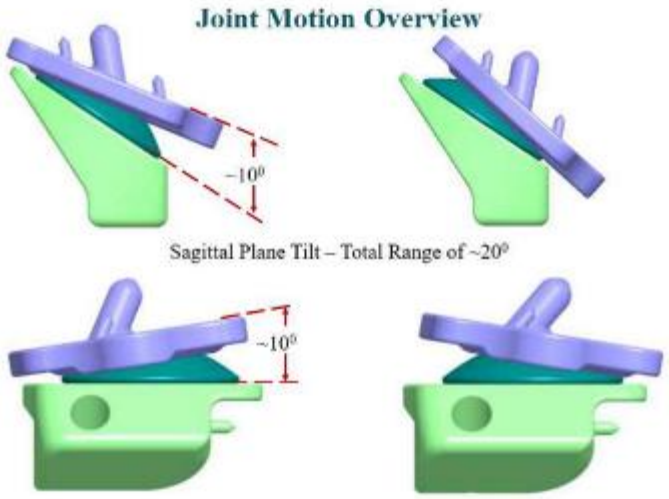


Alternate Poly Designs

5/14/2024 16

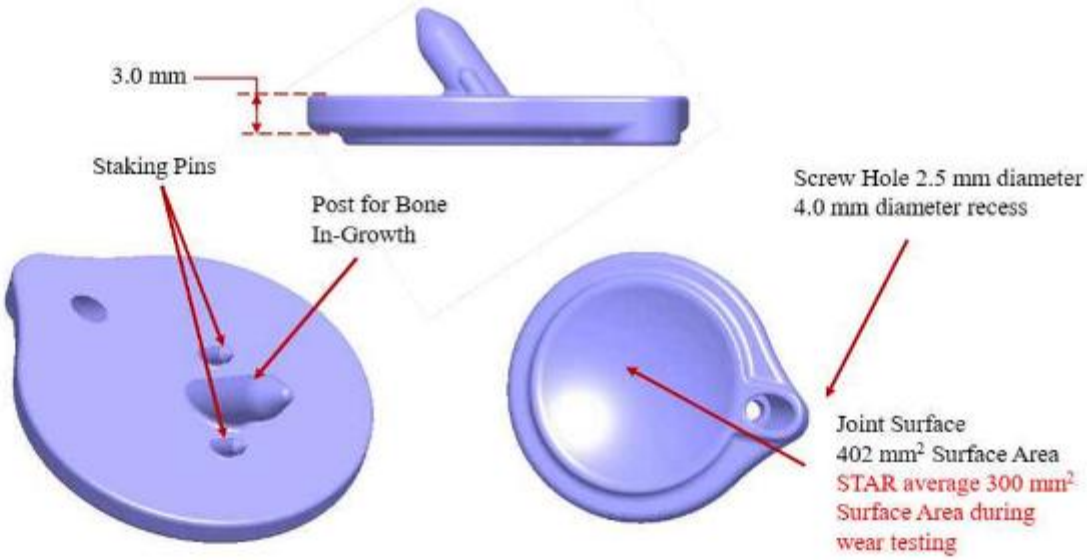
Prototype & Design Overview





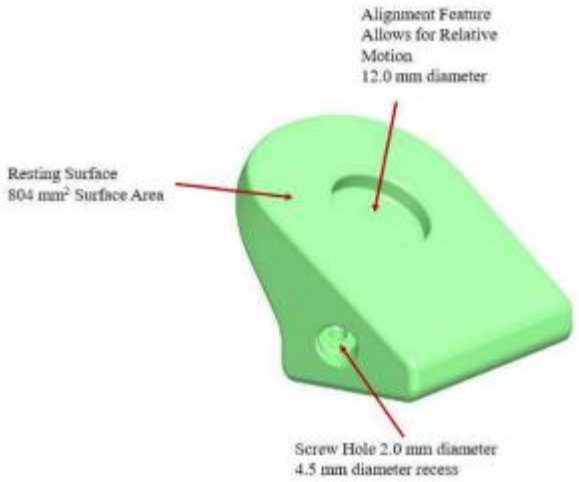
Component Overview (Top Plate)

- Plate is approximately 1.0 mm thick at the thinnest location and 4.0 mm at the thickest location.
- The Post, Staking Pins, and Screw Hole are angled at 45^0 from the sagittal and transverse planes.



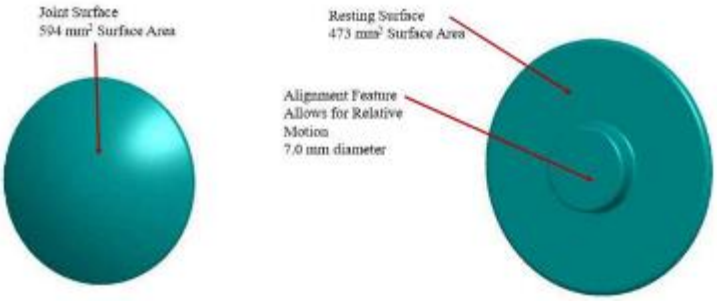
Component Overview (Bottom Plate & Poly)

Bottom Plate ISO View



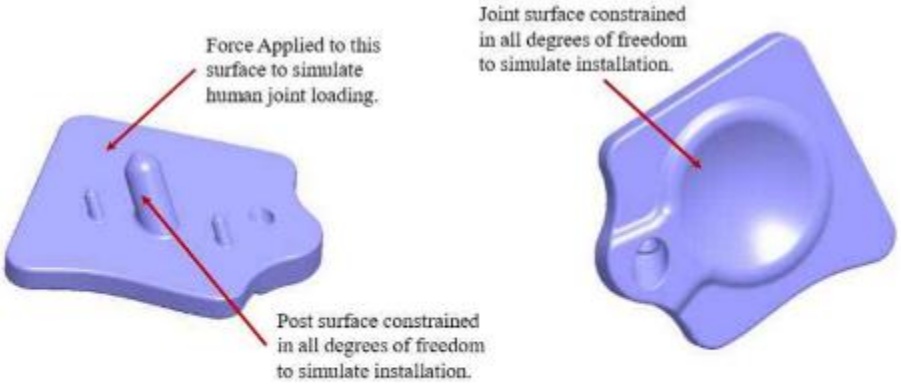
Polymer Sheet ISO Views

- Poly is approximately 1.0 mm thick at the thinnest location and 7.0 mm at the thickest location.

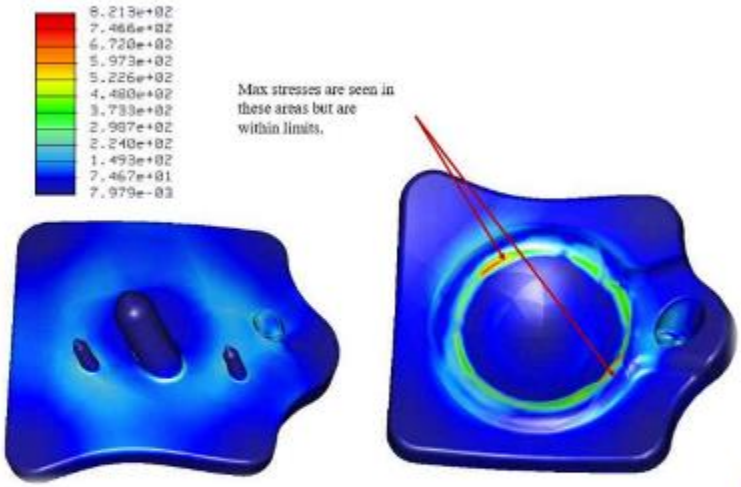


Loads & Constraints

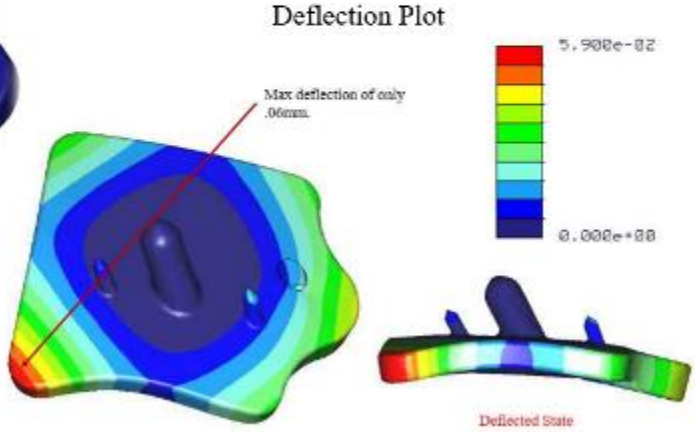
- Load = 556 N (2000 lbf) to simulate dynamic shock
- Load = 390 N (1400 lbf) to simulate high cycle fatigue
- Material = **Titanium Ti-6Al-4V (Grade 5), Annealed**
  - Yeild Strength = 880 Mpa
  - Fatigue Strength = 510 Mpa (Unnotched)



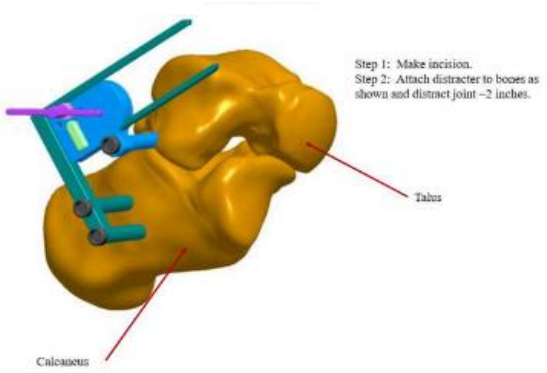
Stress & Deflection Plots/Results

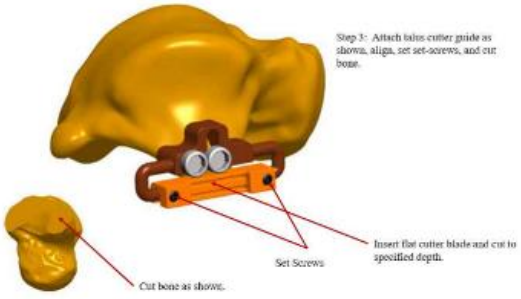


Stress Plot

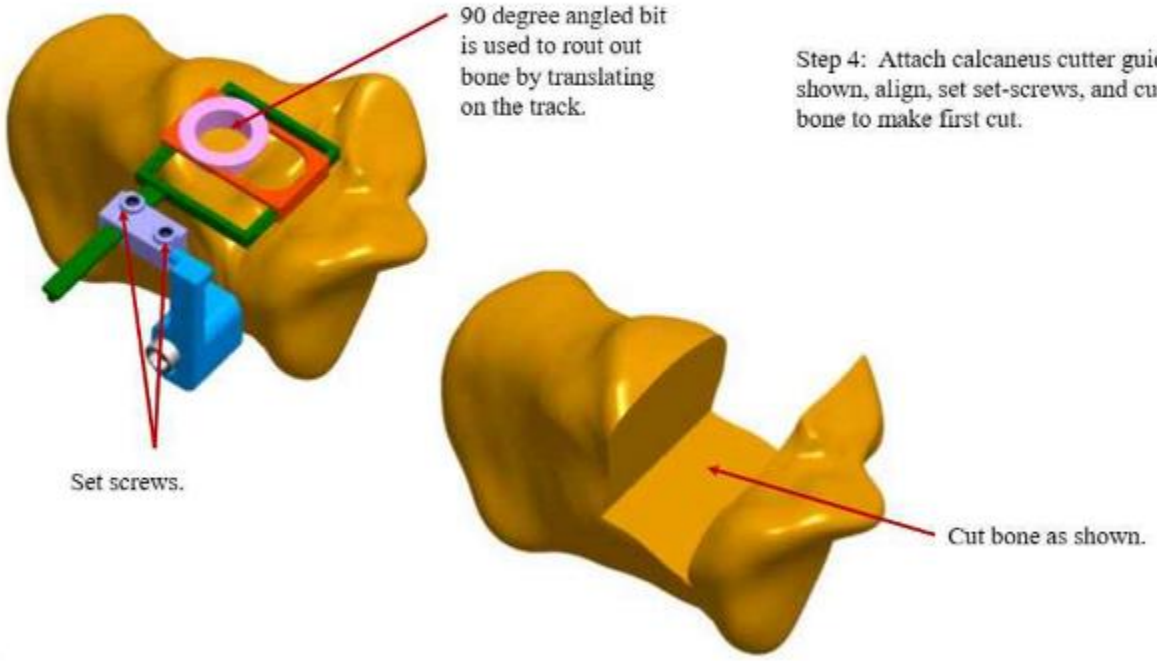


Installation Steps 1-3

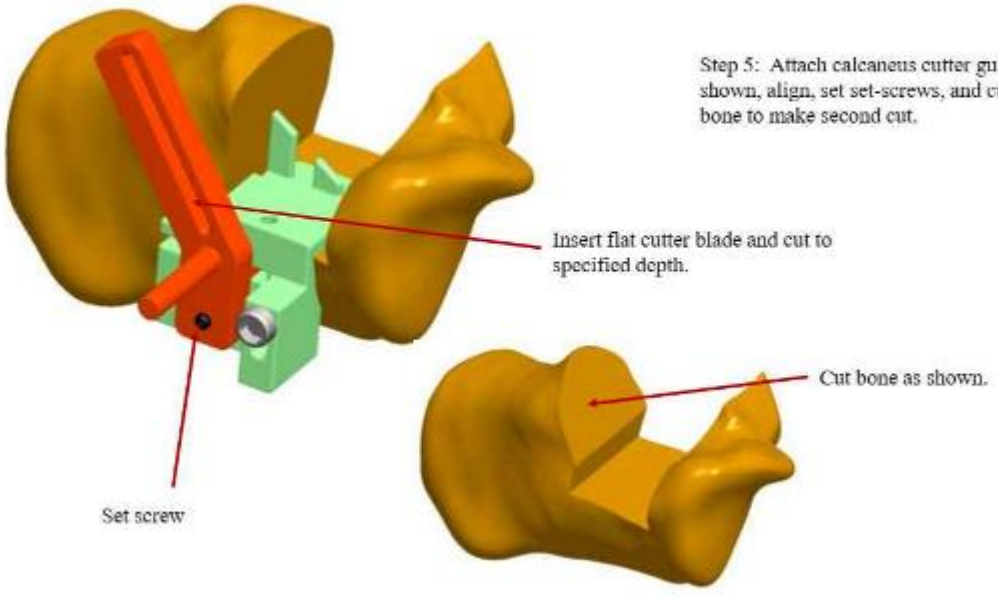




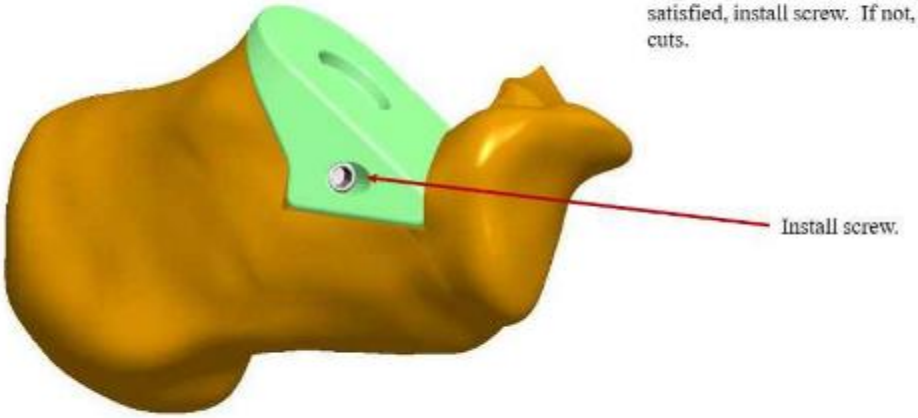
Installation Step 4



Installation Step 5

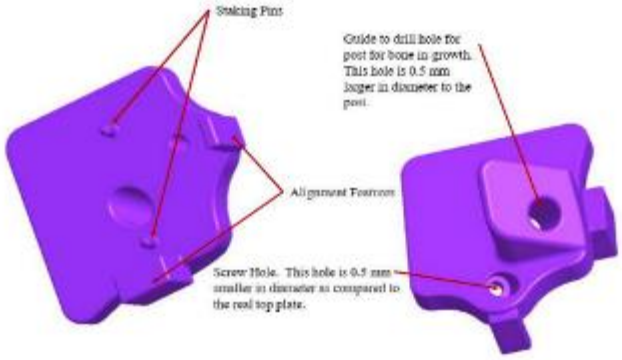


Installation Step 6

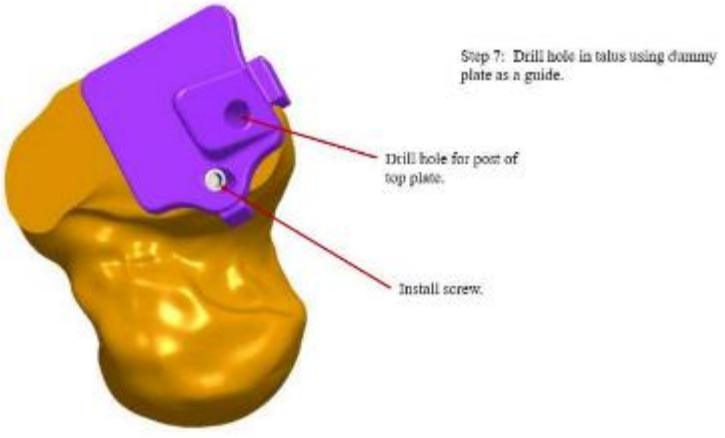


5/14/2024

Installation Step 7

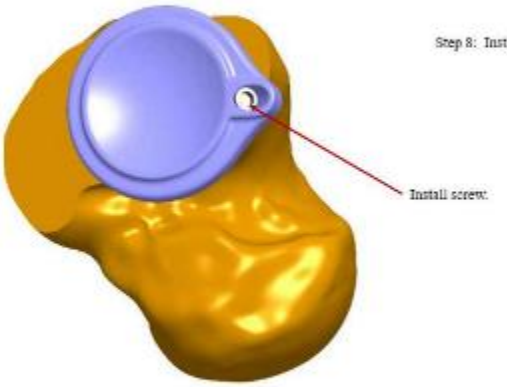


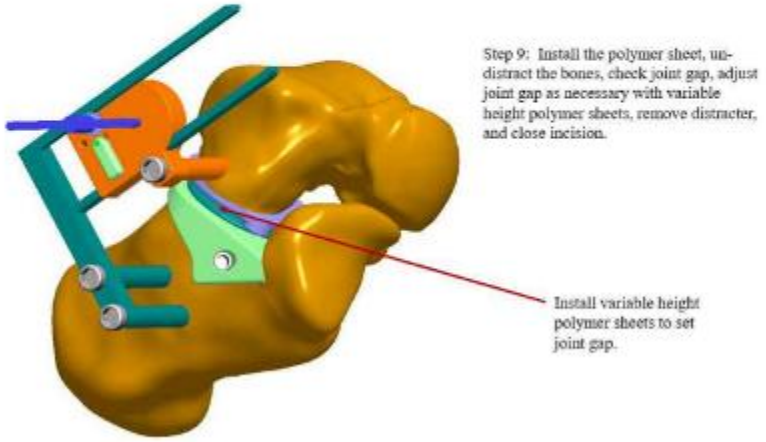
Drill Guide Plate



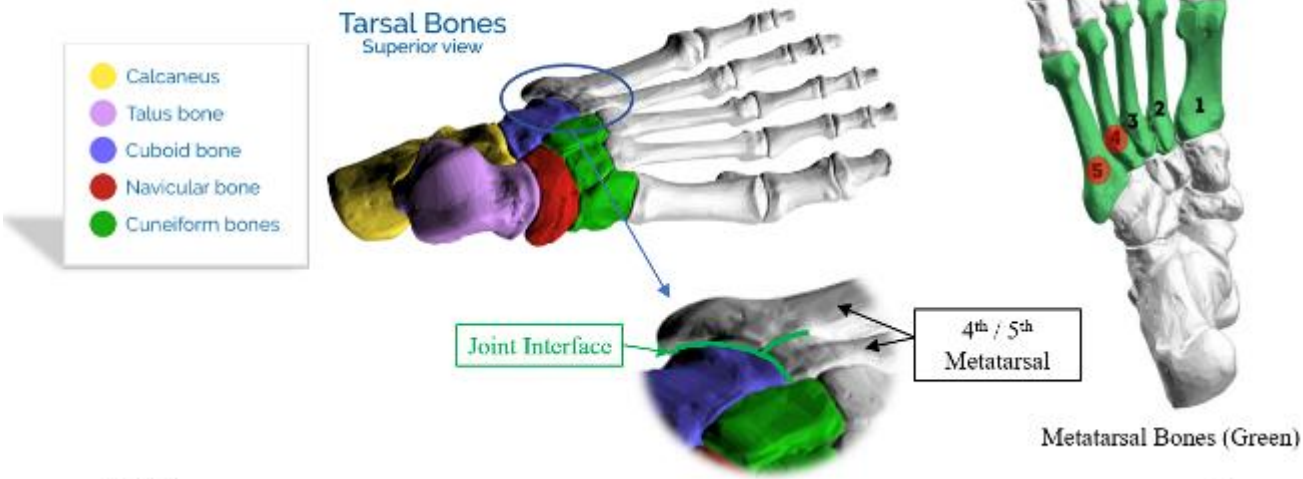
Drill Guide Plate - Installed

Installation Steps 8 & 9

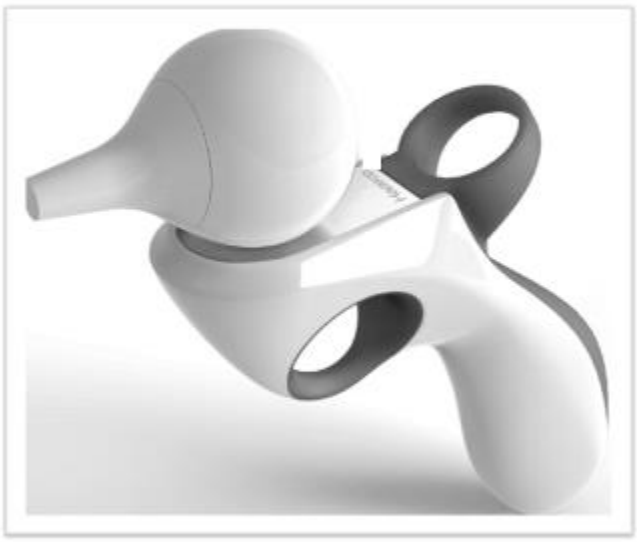




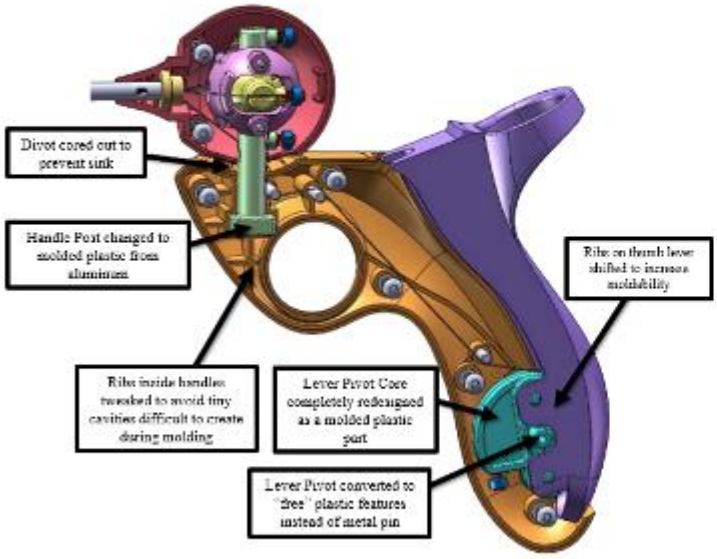
- Other Designs with Innovative Biological Implant Solutions:
  - Hinged Fastener (ROME)
  - 4th & 5th Metatarsal Joint Replacement with Installation Approach
  - Multiplanar Joint Restoration for such applications as spine
  - 3-D Articulating Orthoscopic Device
  - Cost Reduction for Bone Plate Kits



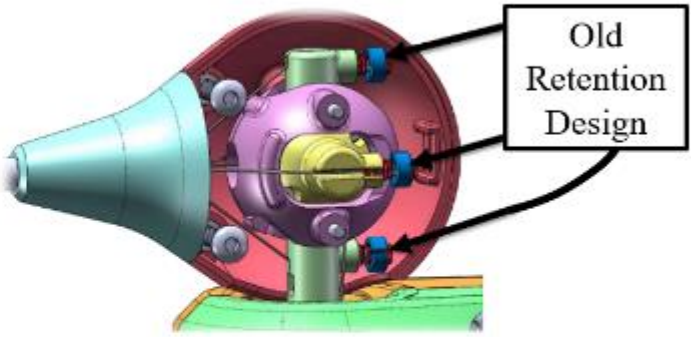
RAL-3D Articulating Orthoscopic Device Overview



Head Design Overview

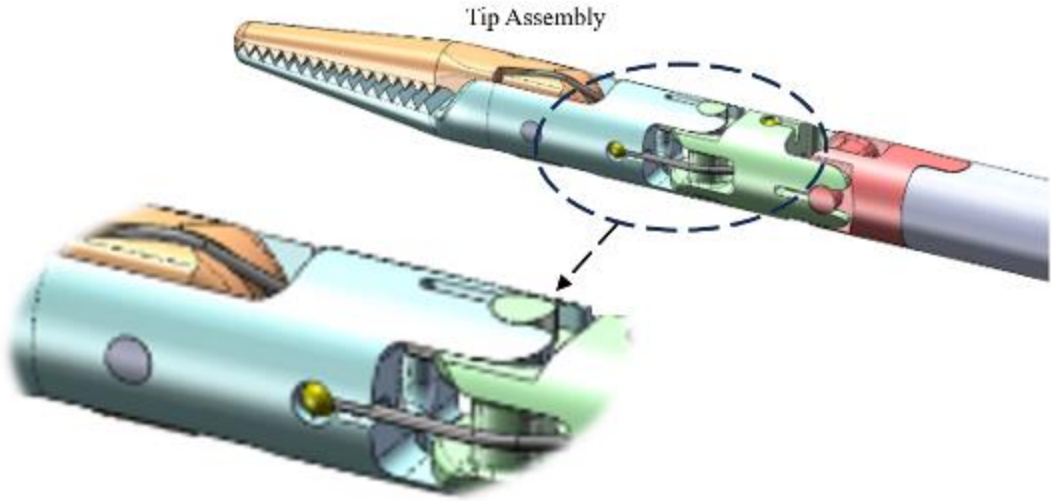


Handle Cross-Section / Cut-Away



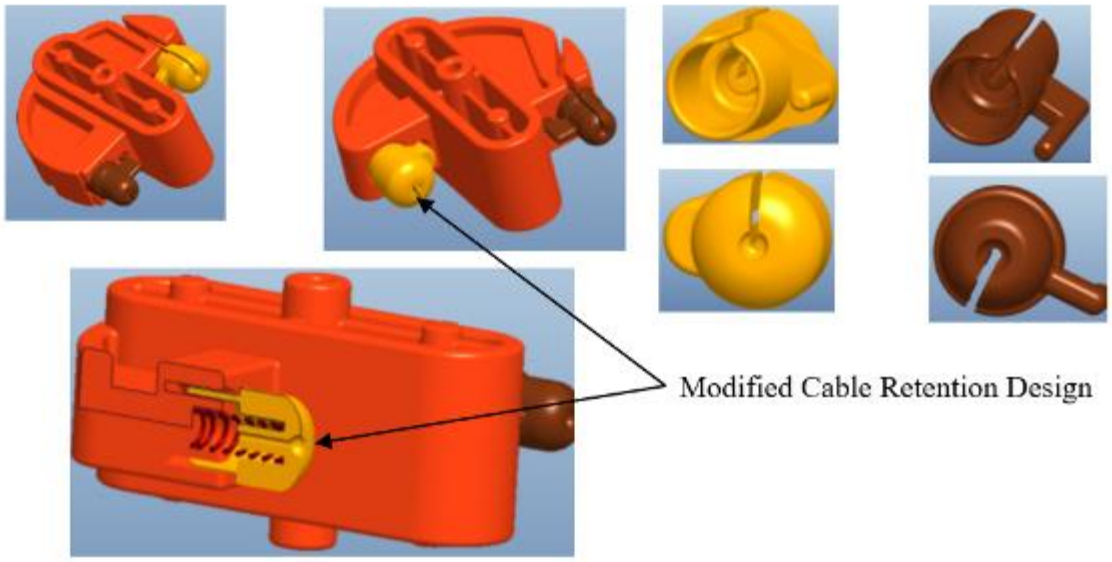
Head Cross-Section / Cut-Away

Tip Design Overview



Device Prototype Example of Tip 3-D Articulation

Component Redesigns



Current Objectives of *Zero Gravity Innovations, LLC*:

- **Zero Gravity acoustics system improving resonant acoustic qualities.**
- Zero Pressure aerodynamic solution for reduced drag / improved MPG.
- Zero Friction tire traction improvement reducing coefficient of friction & tire wear rates.
- Solar panel design improving photo-electric potential energy efficiencies.
- Developing new approach to particle/wave quantum theory with 4-D light optics.

Zero Gravity™

Current Registered Logo

Current Objectives of *Zero Gravity Innovations, LLC*:

- **Zero Thickness Display Protector & Walet.**
- Zero Pressure aerodynamic solution for reduced drag / improved MPG.
- Zero Friction tire traction improvement reducing coefficient of friction & tire wear rates.
- Solar panel design improving photo-electric potential energy efficiencies.
- Developing new approach to particle/wave quantum theory with 4-D light optics.

Broken Display

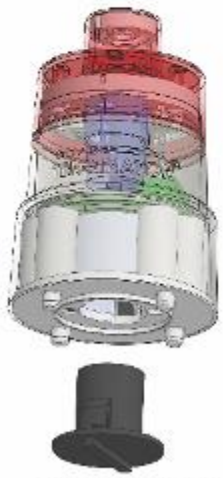
Back View

Front View

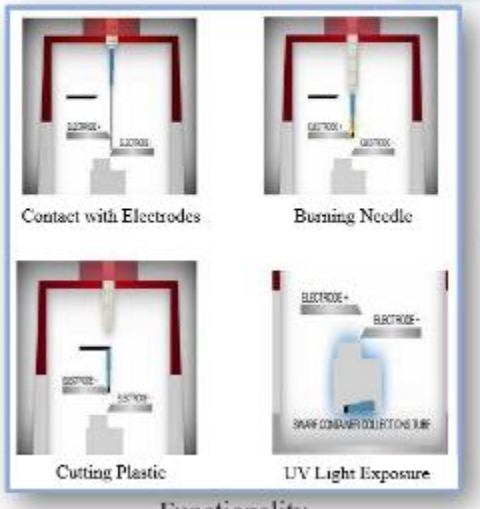
Current Objectives of *Zero Gravity Innovations, LLC*:

- **Sharps Terminator IP Acquisition** (Home Page – RxWorkz).
- Zero Pressure aerodynamic solution for reduced drag / improved MPG.
- Zero Friction tire traction improvement reducing coefficient of friction & tire wear rates.
- Solar panel design improving photo-electric potential energy efficiencies.
- Developing new approach to particle/wave quantum theory with 4-D light optics.

Front/Top Views



ISO Wireframe



Functionality

In Use