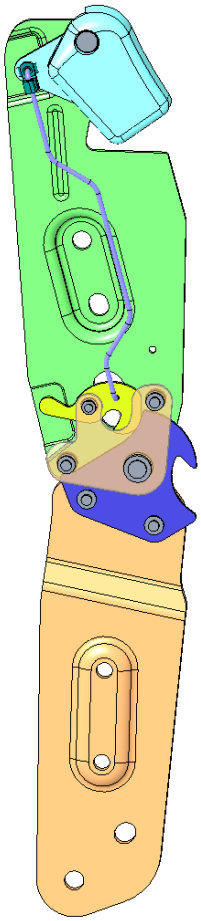
Virtual Engineering, Inc.

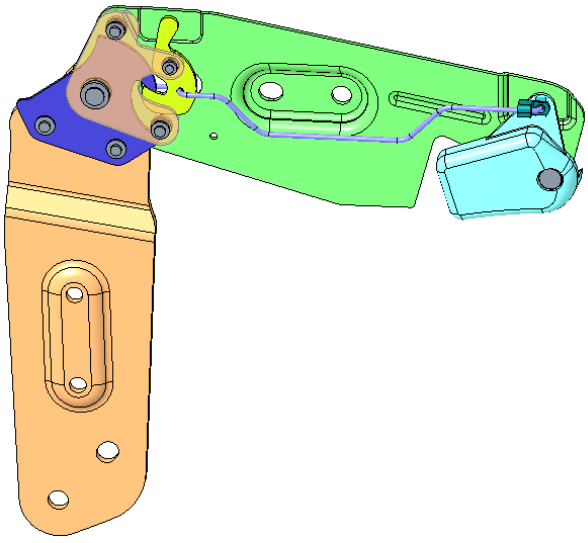
Engineering Your Competitive Edge…

Arm Rest Latch Assembly

- **Objective:**
  - Engineered an Arm Rest Latch that locks in the design and folded positions replacing an inertia latch which exhibited excessive rattle when driving
- **Constraints:**
  - Meet or exceed current performance specifications for strength and durability
  - Must not rattle
  - Be a “drop-in” replacement; assemble to established frame mounting points and fit within existing plastic trim covers



Design Position Locked



Folded Position Locked

Production Assembly

Virtual Engineering

info@veng.com

Virtual Engineering, Inc.

Engineering Your Competitive Edge…

Arm Rest Latch Assembly

- **Process:**
  - Designed with cam locking in both up and down positions to minimize looseness
  - Key locking components manufactured using fine blank stamping process to minimize dimensional variations
  - Eliminated one spring which was a potential source for BSR
  - Specified ring-stake process for rivets to minimize manufacturing process time
  - Added a bushing at the main pivot, further reducing noise potential
  - Performed FEA for static strength forward and rearward load cases
  - Authored DFMEA, Test Specification, DVP&R, and maintained Open Issues List
  - Completed all tolerance stack-ups
  - Created prototype and production drawing packages with GD&T
  - Attended vehicle builds and assisted in resolving any issues
- **Results:**
  - ***Eliminated BSR***
  - ***Reduced Mass and Cost*** compared to inertia latch mechanism (Latch mass = 1.2 kg)
  - Exceeded test requirements at specified reliability and confidence levels
  - Successful product launch
  - Efficient locking design proliferated into multiple arm rest and back latch products

Locking Configurations