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September 2020

## Single Piece Shade Shoe

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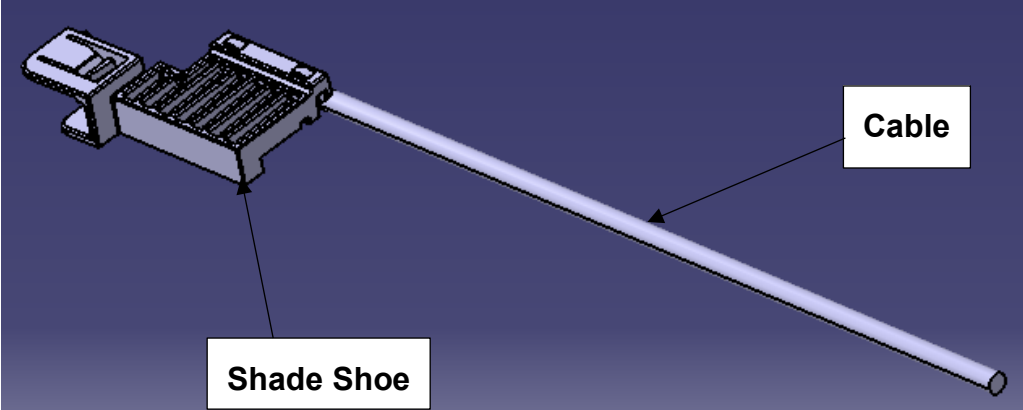
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"Single Piece Shade Shoe", Technical Disclosure Commons, (September 01, 2020)  
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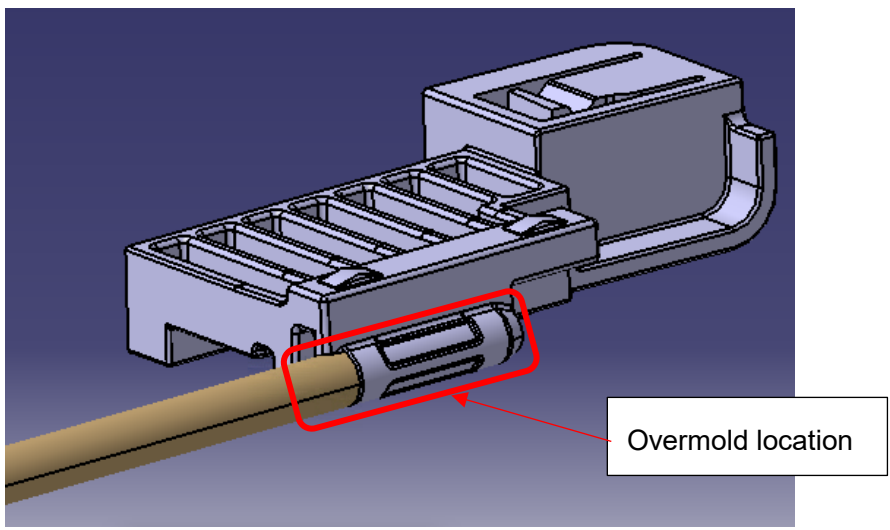
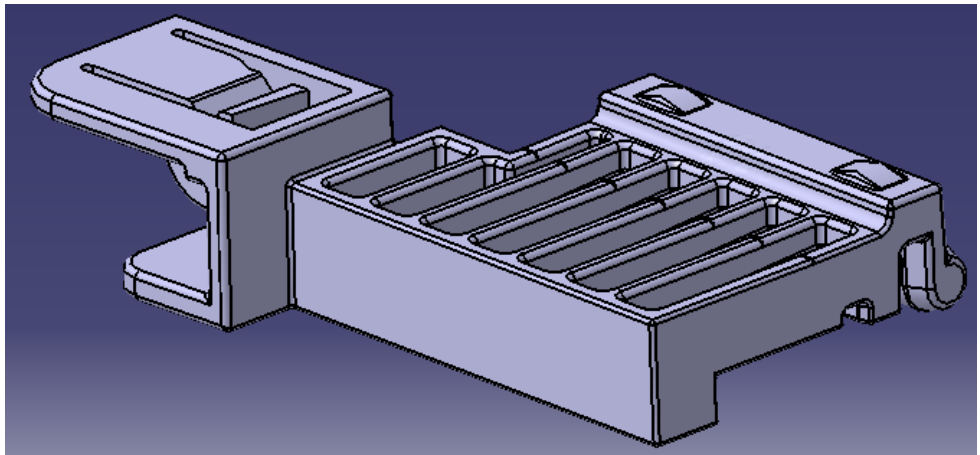
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Explanation of the Invention	of
1. Title of the Invention: <b>Single Piece Shade Shoe</b>	
2. Background of the Invention: To improve the overall manufacturing process.	
<p>2-1. Identification and Explanation of the Prior Arts</p> <p>Note:</p> <ul style="list-style-type: none"> <li>- Please identify the <b>closest</b> prior art(s) to the invention.</li> <li>- Please <b>attach</b> a copy of the identified prior art.</li> </ul> <p>2-2. Explanation of Drawbacks of the Prior Arts and the Object of the Invention</p> <p>Object of invention: The object of this invention is to reduce the overall assembly time and number of components.</p>	
Explanation of the Invention	of
3. Features of the Invention (Structures for Solving the Drawbacks of the Prior Arts)	
<p>Note:</p> <p>This corresponds to “Claim” in the patent application.</p> <p>“Claim” is the most important matter and <b>defines scope of protection</b> in the patent application.</p> <p>The new shade shoe is a single piece design. The shoe is overmolded onto either a metal cable or resin belt to create a single piece. The overmolded portion also includes ribbing structures that prevent oil from pooling or becoming trapped if a metal cable is being used.</p> 	
<p>4. Effects (advantages) of the Invention</p> <p>Including the sunshade drive shoe and shade bar attachment in the cable overmold reduces the overall number of individual components as well as the time needed to assemble. If a metal cable drive system is used an oiling process is required after the shoe overmolding. The ribbing structures on the new shade shoe allow for oil to drain out of the shoe.</p>	

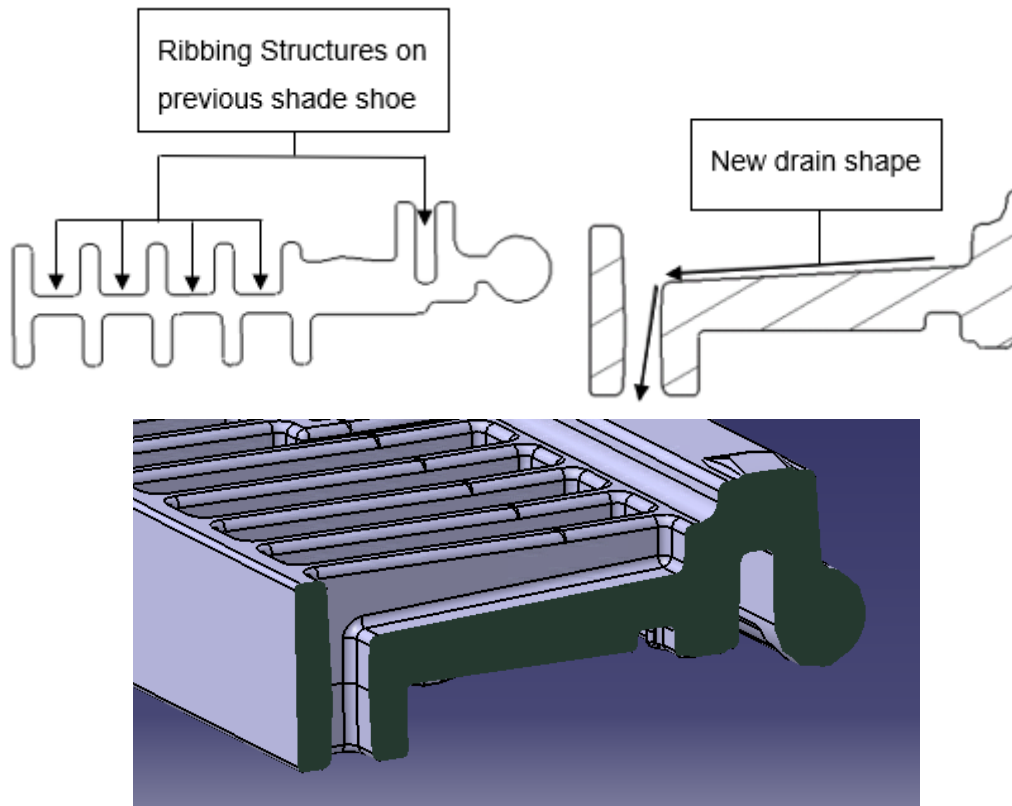
Explanation of the Invention	of
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**5. Concrete Embodiments of the Invention**

- Note:
- Please **attach drawings** related to embodiments and explain embodiments using the drawings.
  - Please write **clearly** the detailed structure of the invention and the operation thereof so as to **enable the skilled person of this art to embody (make) the invention.**
  - Please write the **best embodiment** (best mode).
  - Please write embodiments **as many as possible.**
  - You do not have to explain the structure which is not related to the invention at all.



The previous design incorporated ribbing structures in both the fore/aft and cross-car directions. This created small pockets that could allow oil from the cable oiling process to pool and potentially tarnish the shade material during operation in vehicle. Cross-section of 3D part shows how the ribbing structures on this part create small pockets.



There is no longer a need for an additional cleaning/degreasing process after the cable oiling process. The lack of needing an additional cleaning process will reduce the overall manufacturing cost of the sunroof. The oiling process is performed by placing batches of drive cables into a container of oil. The new ribbing structure allows any excess oil to drain off the shade shoe portion of the drive cable after being removed from said container of oil.