

# ME 24-688 – Week 3

## Problem Set Assignment



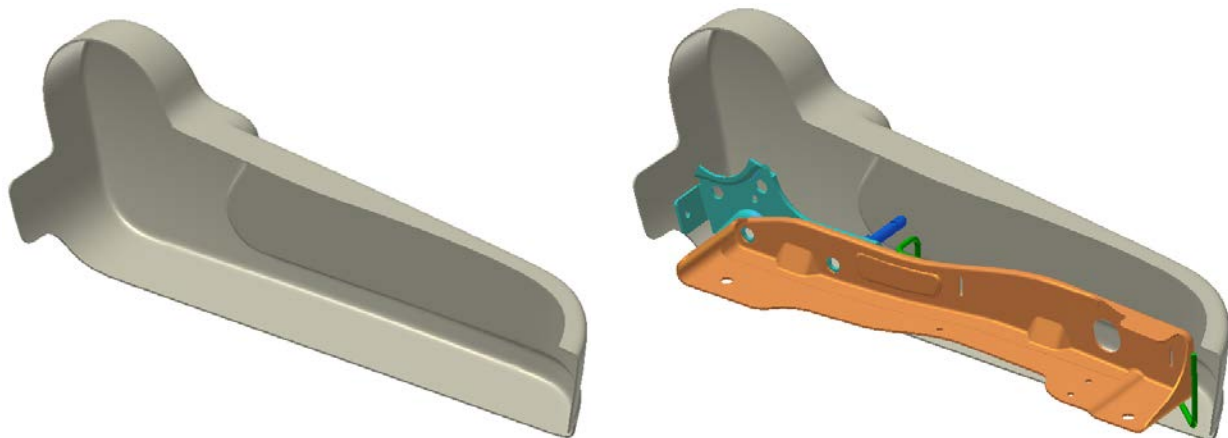
### 1 Styled Plastic Cover Part Design

The week three problem set assignment is to complete the detailed design of a styled plastic molded part. The part is the side plastic cover for the automotive seat where the power seat controls mount and the seat release handle. Mounting the cover to the seat frame happens with a fastener in the back and several push in clips on the side.

#### 1.1 Provided Items

To start the assignment you are provided the outer styled surface geometry from the conceptual designer. The surfaces are thickened to 2mm as a starting point. Also included in the provided Autodesk Inventor part (IPT) file is solid bodies of the other components where the cover mounts and interfaces with.

The images below are from the provided "Side Plastic Cover.ipt" file.



#### 1.2 Final Deliverable

The final deliverable for this problem set assignment is to submit your completed Autodesk Inventor (IPT) part file. The final part file must contain at least five (5) of the seven (7) noted feature requirements modeled within the provide start file. Each of the feature requirements can be designed to your desire as long as they produce the required goal.

Grading for this problem set will be based on the following elements:

- 60% - Fulfillment of the design requirement of the selected Features
- 20% - iProperty population
- 10% - Use of best practices. (Fully constrained sketches and correct use of plastic features)
- Up to 10% Extra credit - Each additional feature that is correctly completed

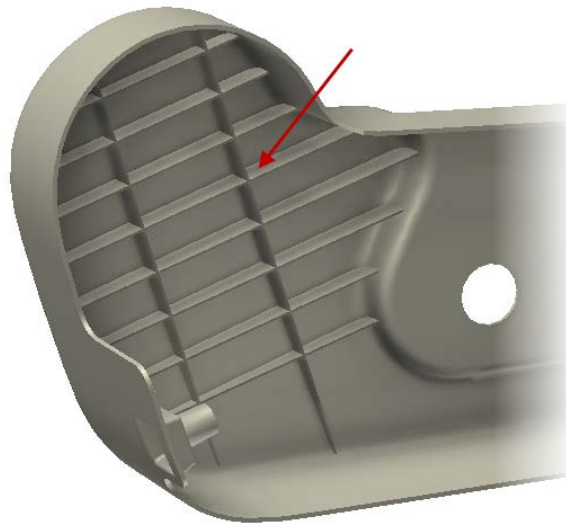
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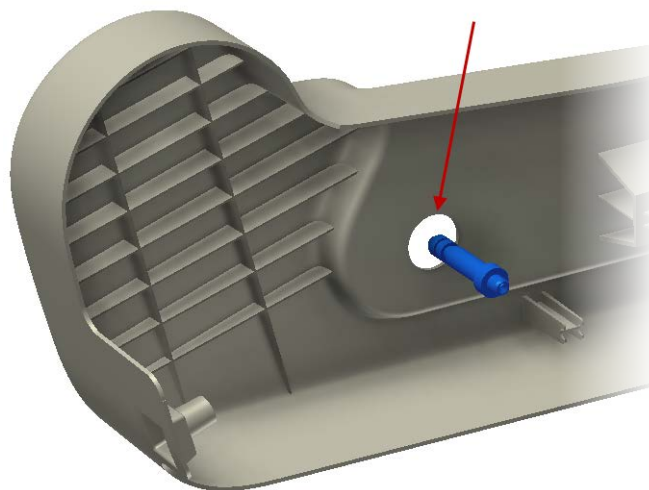
### Feature Requirement 1

Add 10 thin ribs to the back of the component to add strength and improve the form of the part after injection molding. The width of the rib should not be greater than 2.0mm and contain a draft angle on them to avoid locking in the mold.



### Feature Requirement 2

Add a circle hole like feature through the complete component for the release handle to mount to the "blue" pin part. The blue "Handle Pin" solid body in the provided part is the location of the handle in final assembly so the hole needs to be 26.0mm in diameter and circled in line with the pin.



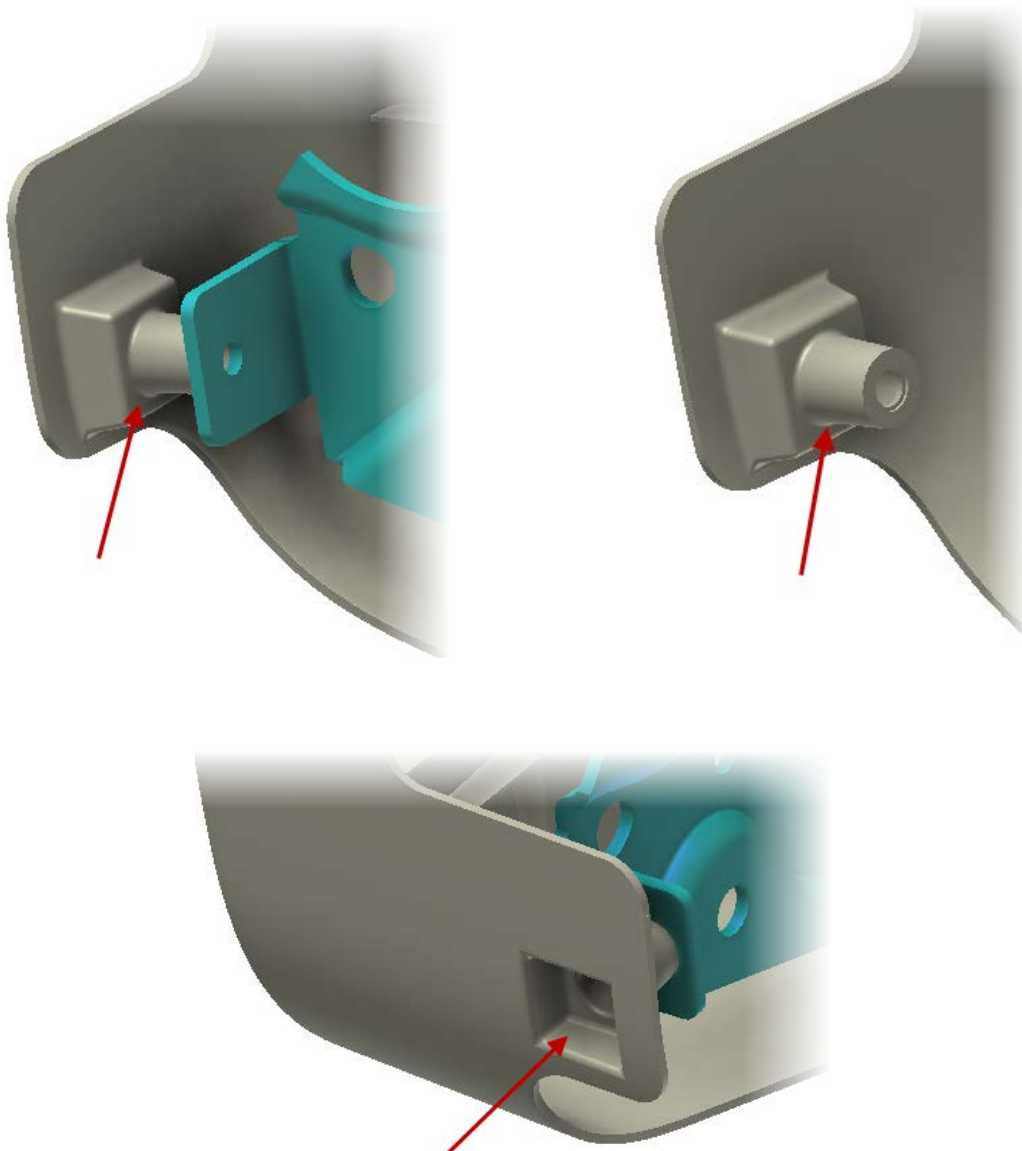
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### Feature Requirement 3

One of the main mounting points for the cover to the seat frame is the back fastener. Here a rest feature needs to be added that is a 22mm square centered around the frame mounting hole on the cyan colored "Rear Mount" solid body. Once the rest is in place a boss feature is used to provide an extension to the frame to ensure a secure mounting of the cover with a fastener.



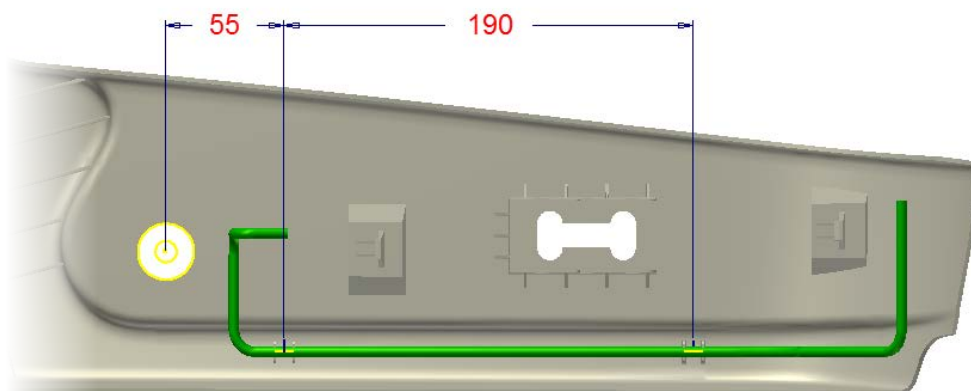
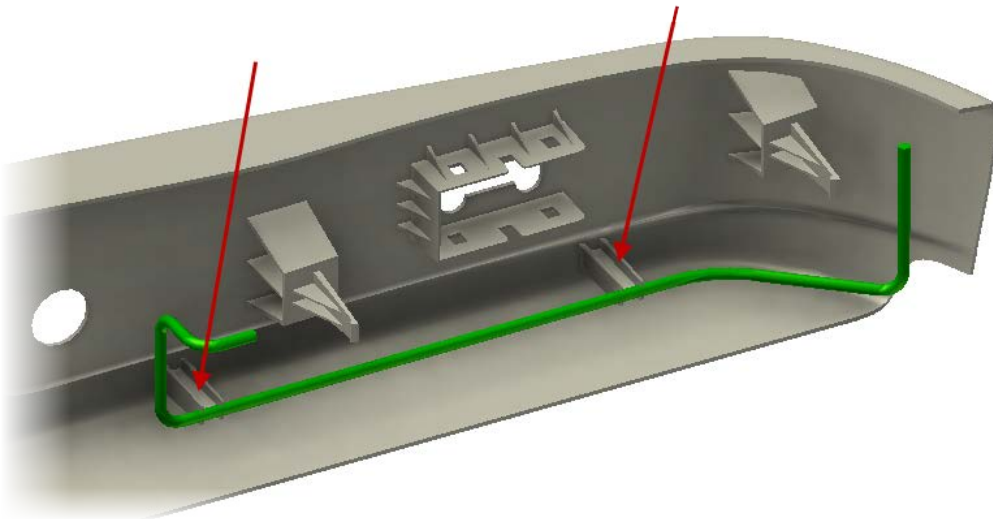
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### Feature Requirement 4

To ensure the side cover is ridged in place as someone presses the seat controls two press mount plastic features are added. These features are the same in design and the position of them is noted in the below images. The feature is designed to press fit around the side metal bar in green (Side Wire) from the seat frame.



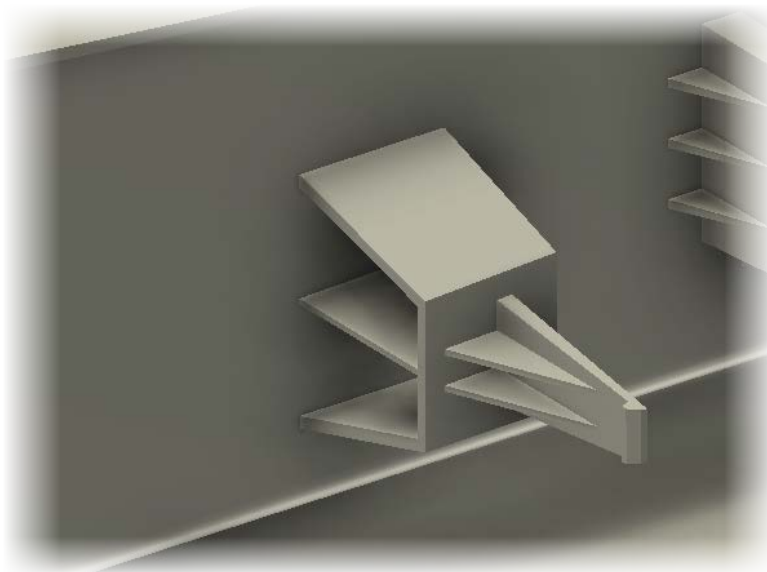
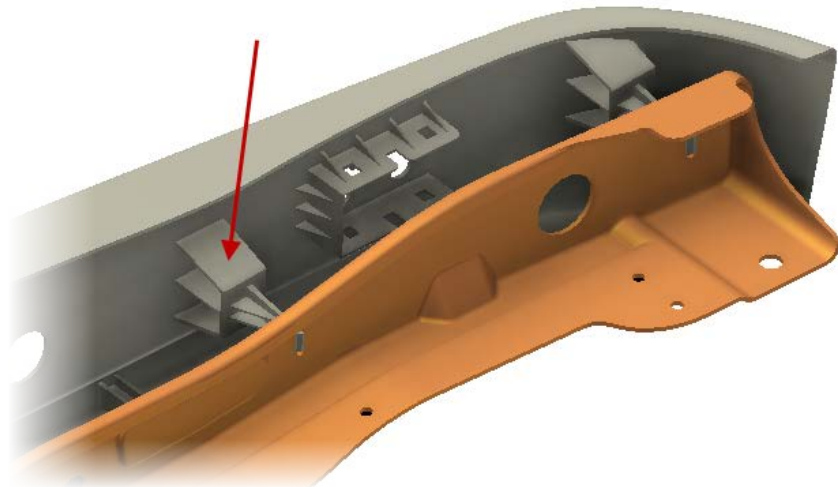
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### Feature Requirement 5

To clip the side cover into place there are stamped slots in the orange “Side Mount” frame for the side cover mounting. There needs to be an extrusion based built platform for a snap fit feature to be added for clipping into the frame side. The snap fit feature should be aligned to the slot to ensure it clips into the proper position. To ensure the cover can be manufactured there should not be a wall thickness on the feature greater than 2.5 mm.



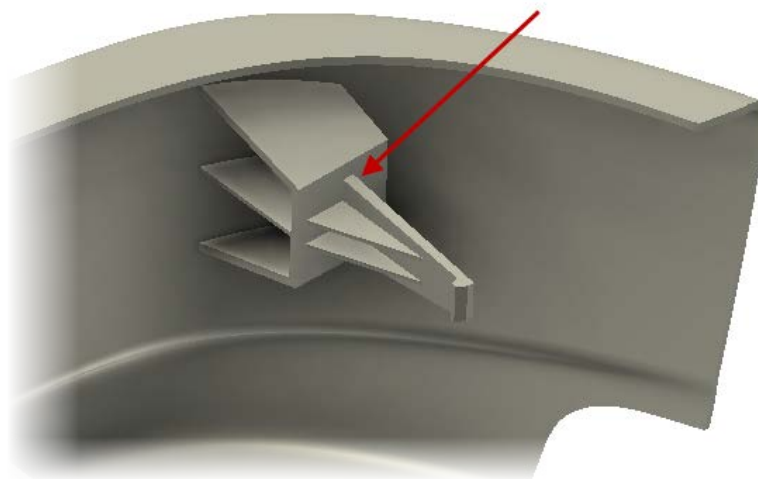
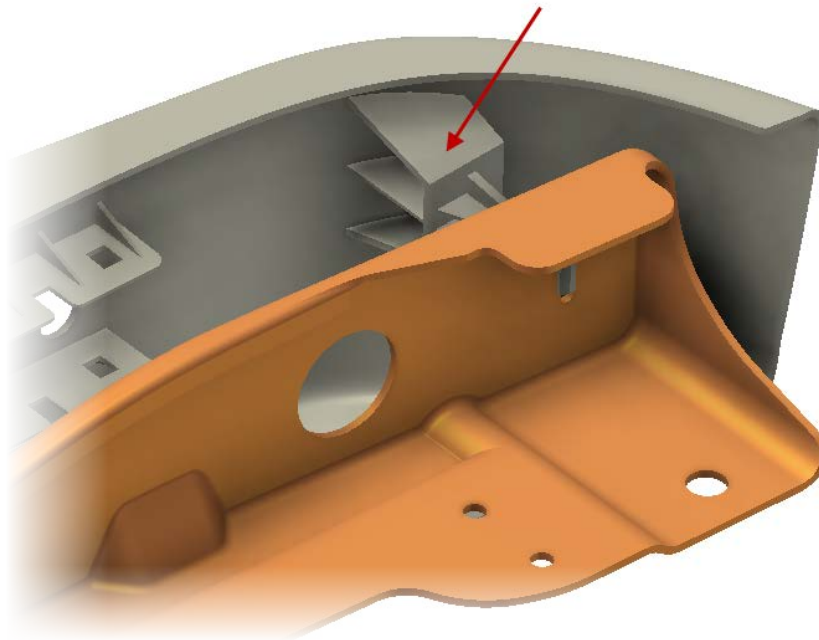
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### Feature Requirement 6

To clip the side cover into place there are stamped slots in the orange “Side Mount” frame for the side cover mounting. There needs to be an extrusion based built platform for a snap fit feature to be added for clipping into the frame side. The snap fit feature should be aligned to the slot to ensure it clips into the proper position. To ensure the cover can be manufactured there should not be a wall thickness on the feature greater than 2.5 mm.



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### Feature Requirement 7

The seat power control switch needs to be mounted on the side cover. The provided "Switch.ipt" model is provided to provide dimensions for the mounting feature. The switch should press down and snap into position with a cut out for the switch buttons to extend through the side cover.

