

# Adjustment of Burton seating

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This Bachelor's assignment was completed at Burton Car Company in Zutphen. Burton sells kits to build a sportscar on the undercarriage of the iconic Citroën 2CV. The original 2CV chassis, engine, and gearbox form the heart of the car, which is built up of a combination of Burton-original, overhauled, and 2CV parts. Using a kit supplied by Burton Car Company, anybody with a well-filled toolbox can turn the 2CV into a Burton and customize it to his personal preferences. Once the car is finished, it is hardly recognizable as a 2CV. One characteristic aspect of a Burton is its double seat, the recycled rear bench of a 2CV, which is fixed on the bottom plate of the car.



Figure 1: Burton sportscar

Because the seat is fixed, it cannot be adjusted forwards and backwards. This limits the range of users that can drive a particular Burton, as some people might be too tall, whereas others are too short. The aim of this project was to develop a prototype for a mechanism that facilitates an adjustment forward and backwards.

The scope of the project was phrased as:

*“Developing and testing a prototype for a system that enables horizontal adjustment of the seating in a Burton.”*

The main question in this project was:

*“How can the seat of a Burton be made adjustable in forward and backward direction?”*

To answer this question, a large part of the development process described in “Product Design” by Eger, Bonnema, Lutters, & van der Voort (2013) was followed, which forms the basis of Industrial Design. The start was an analysis phase, followed by an ideation, conceptualization, realization, and prototyping phase. The state of the project at the end was a tested prototype with known points for improvement.

The prototype is largely made of sheet metal and consists of two guiding rails that are mounted to the floor of the car using nuts and bolts. The prototype can be seen mounted on a wooden pallet in Figure 3 below. The rest of the mechanism slides along these rails using nylon wheels. The original 2CV bench can be placed on this slider, locking in with two fixed pins at the front and two retracting pins at the back which are present in the original 2CV bench. The sliding part with attached seat can be locked at fixed intervals using an indexing plunger on each side. An indexing plunger is a mechanical component with a spring-loaded retractable pin that can be used to lock parts in various positions see Figure 2. Through a handling mechanism, the user pulls on these two plungers, retracting their pins and enabling the construction to slide forwards or backwards and lock into a new position.



Figure 2: Indexing plunger

An important requirement was that the sitting height should remain as low as possible. This is the reason why the rails are placed on the side of the seat, instead of at the bottom, as is the industry standard.

Theoretically, the mechanism should enable users from 1.56 m to 1.87 m to fit in the seat without adjustments to the car. Practical tests have shown users from 1.67 m to 1.90 m can fit, and a remaining 7.5 cm can be used for extra forward adjustment.

At the end of the project, a list of recommendations was made that can be used for the improvement and further development of the product. Besides this, a start was made on production and designing the handling of the mechanism.

The most important conclusion is that the prototype as it is, is functional. The mechanism works and a large group of users can sit comfortably in the car. If the points for improvement are implemented, a second prototype can be built, which might already be ready for production.



Figure 3: Prototype



Figure 4: Bench on prototype



Figure 5: Adjusted seating

## REFERENCES

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Eger, A., Bonnema, M., Lutters, E., & van der Voort, M. (2013). *Product Design*. The Hague, South Holland, the Netherlands: Eleven international Publishing. Retrieved April 26, 2021