

what?

Design challenge

where?

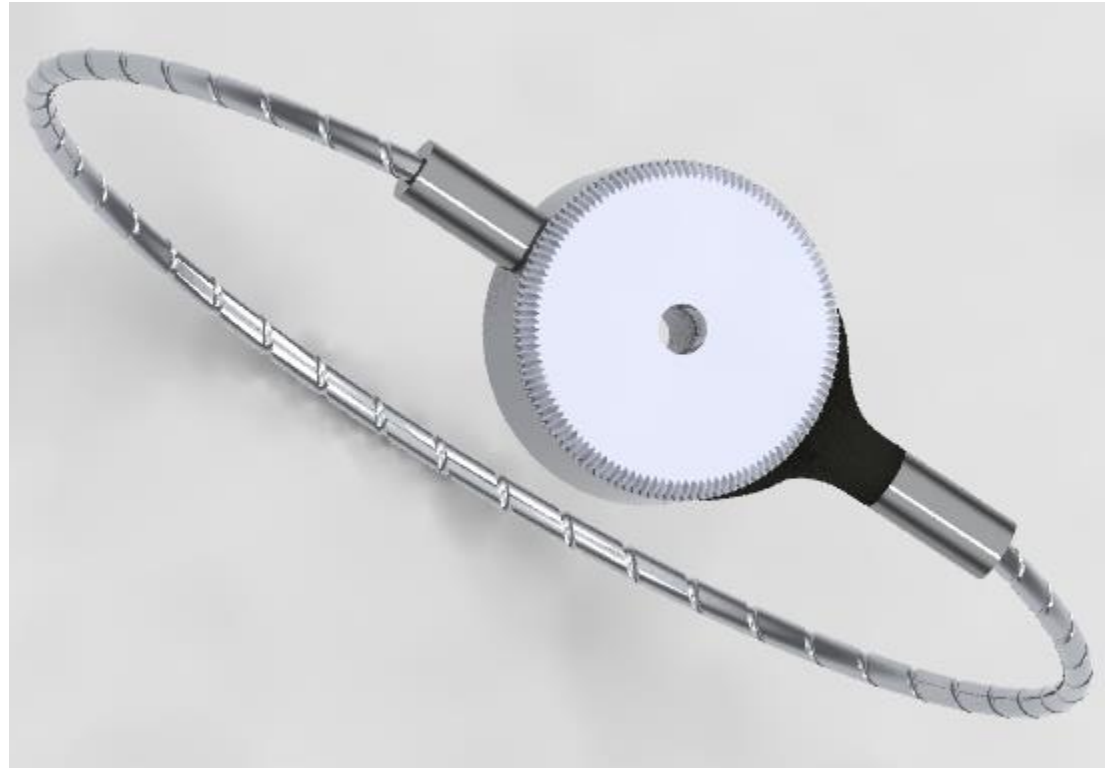
Personal project

when?

June '18

who?

Design engineer



The challenge involved designing a bracelet based on the given rendered image. The given image was to be converted into a fully functional and ready to manufacture product. Based on the given constraints a locking mechanism had to be designed followed by selecting material and manufacturing processes for each component.

jewellery design | mechanism | CAD | design for manufacturability | color material finish

sleek

The challenge:

Identify the detailed steps involved in making a bracelet from designing to mass manufacturing

Design requirements:

Material:

- Water resistant
- Aesthetic
- Withstand -10 to 65°C

Usage:

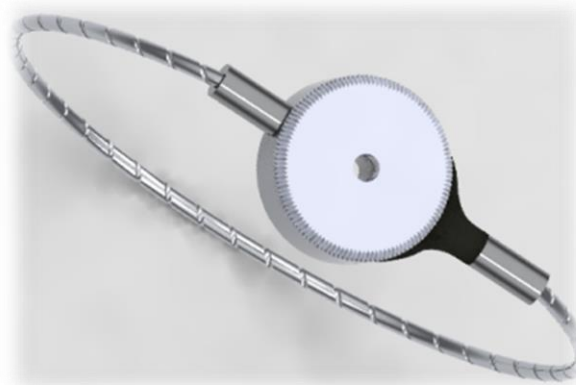
- 3 year warranty
- Twice daily use cycle

Manufacturing:

- Tolerance 30µm (critical)
80µm(non-critical)
- 500k units monthly
- Surface finish and optimum quality

The approach:

The process began with identifying the characteristics of the product personality followed by designing and engineering the product around these characteristics.



Modern

Elegant

Intuitive

Design
Simple
Minimal
Sleek

CMF
Silver
Matt and gloss
combination

Interaction
Easy to use
Adaptable

1 Engineering

A locking mechanism was designed followed by CAD modeling of every component.

Dial

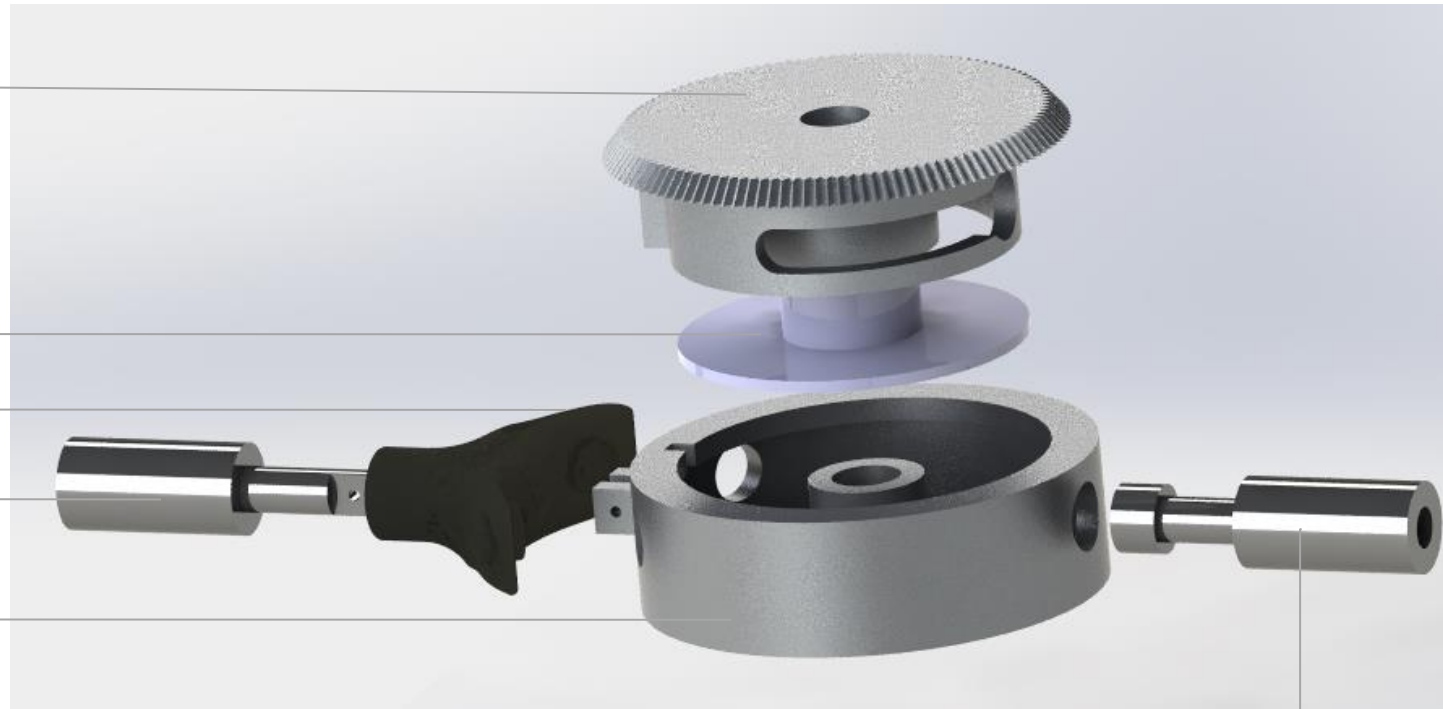
Nylon washer

TPU rubber cover

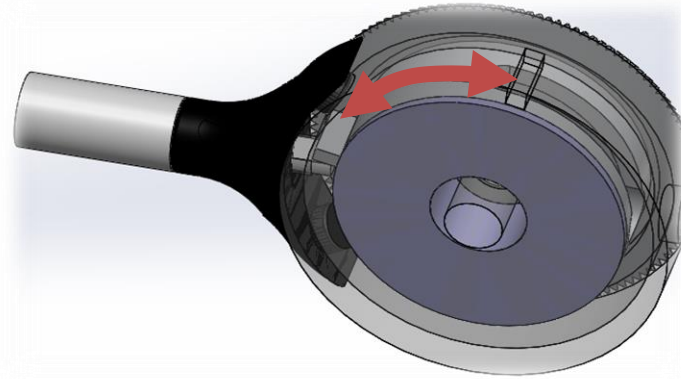
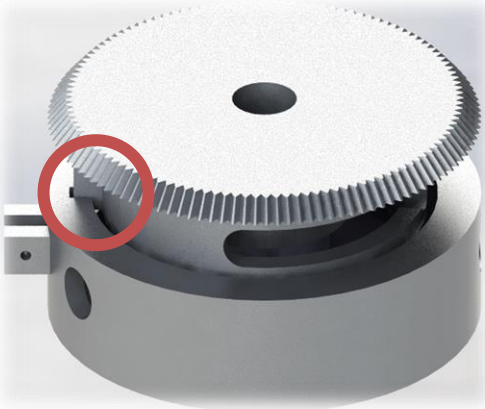
Chain connector

Main housing

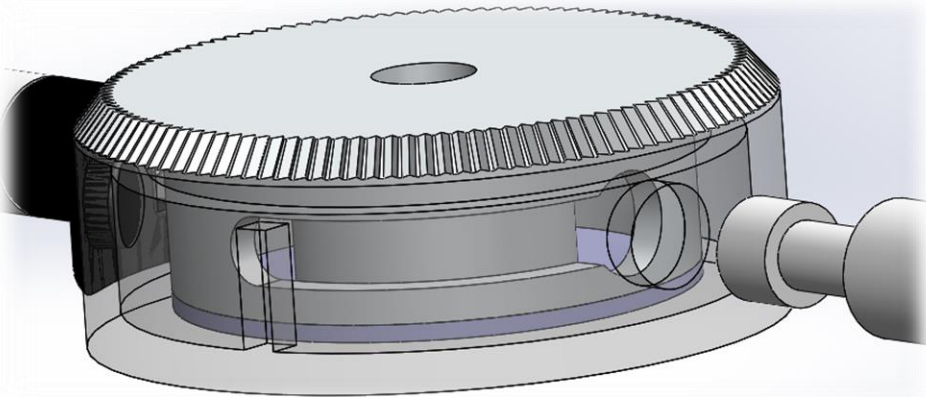
Lock pin



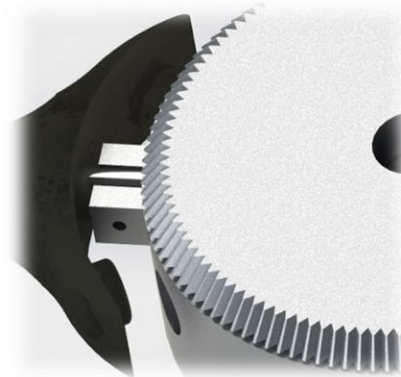
Alignment protrusion acts like locator and aids workers in assembly



Connector pin extends in the main housing preventing the dial from opening up.
Dial rotation restriction acts like an intuitive feedback and the user is assured that the bracelet is locked.



Slot opening in the dial allows only one open position to pull out lock pin



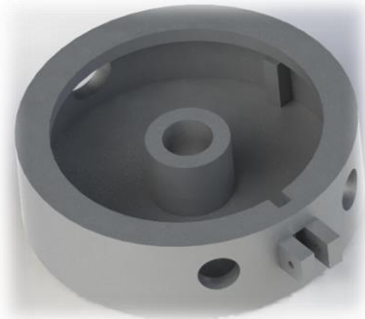
Rubber cover hides the connector pin along with providing flexibility to fasten the connector to the main housing

2 Manufacturing

Component wise material and processes were selected for mass manufacturing and tolerances



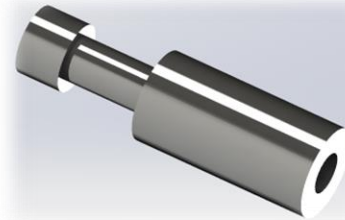
Aluminium
Die casting followed by machining of critical faces



Aluminium
Die casting followed by machining of critical faces



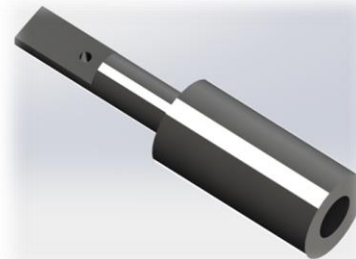
Nylon
Bought out standard component/ Injection molded



SS with silver finish
CNC machining



TPU rubber
Injection molded



SS with silver finish
CNC machining



Silver
Bought out chain