Student Name: Boris Kamarashki

Student Number: 1801643

Programme of Study: Automotive Design

Module: ADAD4009

Tutor: Andre Vesyelkin

Materials and Design

Wristwatch

Introduction and history

Wristwatches are not only made to show the time , a watch can also be a statement of your wealth and your class. Swiss watches with mechanical movement from brands like Rolex , Audemars Piguet and Patek Phillipe are the most lusted-after pieces. Watches like that also can have a big sentimental value and often are passed on by generations. A beautiful timepiece on the wrist is also a great finishing touch to an outfit and it always makes an impression.

“The first wristwatch was created in 1812, to fit the wrist of the Queen of Naples, however, they had previously been introduced in the 1570s but were described as an arm watch. Wristwatches were primarily worn by women as the watches were prone to damage by the elements, which is why men wore pocket watches. Wristwatches became more popular for men in the military. In 1880, Constant Girard, of Girard-Perregaux, mass produced two-thousand wristwatches for German Naval Officers. Brazilian aviator Alberto Santos-Dumont was in search of a watch that would allow him to keep both hands on the controls while timing flights. He reached out to good friend Louis Cartier to come up with an alternative. Cartier and his watchmaker Edmond Jaeger developed the Santos wristwatch, popularized by Santos-Dumont wearing it during his flights.” (Smith, GovBerg On Time)

Product type

The product I have chosen for the task is a simple fully-mechanic watch by a small company called Winner. The manual winding mechanism consist from gears and springs which are moving the watch hands. Mechanical watches are much more valued because of the time and labour spent to perfect the watch mechanism. Battery-powered watches are much more accurate but all collectors and connoisseurs prefer manual or automatic movements.

Bill of materials and assembly methods

Part	**Material**	**Manufacturing method**
Watch case	Stainless steel	Melted and casted
Glass covers	Mineral glass	Heat casted
Strap	Leather	Cut edge sealed with a colour stain
Clasp	Stainless steel	Melted and casted
Screws	Aluminium	Machine cut
Dial	Lightweight metals	Casted and assembled by craftsmen

Watch hands	Metal	Casted, shaped and painted with luminous paint
Pendulum rotor	Brass	Melted and casted
Spring	Steel	Coiled
Jewel bearing	Ruby	Cut graded
Support strut	Aluminium	Melted and casted
Gears	Cast aluminium	Casted and machine cut
Crown	Stainless steel	Machine cut
Mechanism holder	Plastic	Injection moulded

Materials used

- The straps of most watches are mostly made of metals or leather. Of course , as price differs you can get many different options. Leather straps can range from artificial leather to real crocodile leather or other rare types of leather and most of the time they are complimented by contrasted stitching. Metal straps range from all kinds of stainless steel , aluminium to the precious metals as gold , silver and platinum. In this case we have a genuine leather strap with alligator pattern which is stamped on.

- The case of the watch can also be dependant on the price. Most watch cases are made from plastic parts or all kinds of metals , from normal to precious. Nowadays manufacturers are developing watch cases even from precious stones such as diamonds and sapphire stones. The watch I am presenting has a stainless steel case, which is one of the cheapest to manufacture and one of the most-reliable.

- The casing of the watch I am presenting also consist of a glass front and a glass back which exposes the mechanism . Most inexpensive watch manufacturers use plastic or glass front covers. Premium watches have a sapphire glass casing on both sides.

The most important part of a watch is its **mechanism**. This particular watch has a mechanical movement mechanism. It consists of aluminium screws, gears and support strut, a pendulum rotor made of copper, a steel spring and ruby stones that are used to balance the mechanism and make it more accurate.

Advantages

The mechanical movement is often chosen over the quartz movements for luxury watches because of the level of quality and craftsmanship effort put into mechanical movements. Created by expert watchmakers, these movements contain a lot of tiny components working together to power the timepiece. (Wixon Jewelers)

Leather straps are the best choice for a luxury watch and they look more formal and stylish than their metal and rubber counterparts. Leather straps are also less likely to coming undone because of the buckle system they use. The pin can almost never come undone, unless the hole in the leather becomes stretched. (IKnowWatches)

The usage of stainless steel in the watch case has many advantages.The first and foremost quality of stainless steel is that its anti-corrosive. When all iron products rust and degrade in damp air, products of stainless steel last and shine longer. Some stainless steels ensure better anti-corrosive properties than others. Stainless steel has high oxidation resistance, what means it will not oxidize or turn black. Watches made of stainless steel are also comparatively hard (Monatanstahl)

Future development

Wristwatches are something that in my opinion will never go out of fashion. Nowadays smartwatches are blowing up on the market as even high class brands known for their craftsmanship like Hublot and Tag Heuer are hopping on the trend as they presented a line of smartwatches aswell. I still think that mechanical movement watches will keep being produced because of the sentimental value that they will hold and craftsmanship effort put into them. Also, a smartwatch like the Apple Watch can never have the beauty of the mechanical movement watches. Big brands like Patek Phillipe and Hublot keep coming up with new ideas and more efficient ways to make their mechanical watches.

Summary

Wristwatches have became a part of our lifestyle and they will certainly be here to stay. Mechanical watches will always hold the beauty of the craftsmanship put into making them. The future of the mechanical watch will be interesting but I think manufacturers will keep using the same formula in making the mechanism but they will keep experimenting on new materials.

BIBLIOGRAPHY

Sources:

https://www.govbergwatches.com/blog/history-of-horology/

https://www.wixonjewelers.com/education/swiss-watches/watch-movements/

https://www.montanstahl.com/blog/stainless-steel-watch-industry/

https://iknowwatches.com/leather-vs-metal-watch-strap/

Watch Deconstruction



Mechanism front

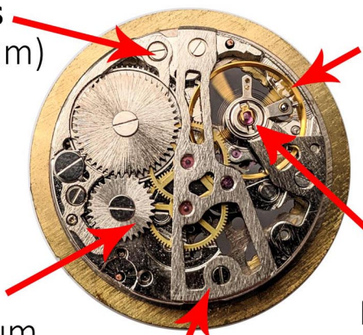


Watch hands
(plastic and metal)

Dial
(plastic and metal)

*the white part of
the hands is painted with
luminous paint which
glows in the dark

Mechanism back



Screws
(aluminium)

Pendulum rotor
(copper)

Spring
(steel)

Gears
(aluminium
and zinc)

Ruby stones
(used for more balance
and accuracy)

Support strut
(aluminium)

