

« Polissage Maret »

Originally the « Polissage Maret » was developed to improve the surface finish of miniature components. Initially the process was limited to our own products, notably parts for the watch industry, and then rapidly expanded to other types of industries.

In view of the superb qualities obtained, the term « Polissage Maret » became synonymous with the notion of “ ultimate surface quality ”.

Our process is unique and was constantly improved over half a century, making us the true leader in this domain.

Surpasses traditional surface finishing methods !



1. General Aspects

The methods applied are based on our own concept and development. They were constantly developed further and adapted to the changing needs of our clientele. Our objective is to obtain first grade surface finishes on parts of any geometry and shape. Mastering the applied methods allows us to remove material at a controlled rate, (anywhere from 1 to 5 microns according to the degree of polishing required), and thus guarantee the final dimensions to be within tolerances. This type of polishing, called «Dimensional Polishing», is particularly important on delicate parts such as pivots, shafts, bearings, gears, etc. Combining the various techniques allows us to create and to polish radii and other precision shapes. In essence, our polishing method removes a very minimum of material without deformation of geometry of the part. It is, however, not excluding more severe removal of material on protruding features of a component.

The main advantage of this polishing method is to obtain a uniformly brilliant surface finish. It reduces the friction coefficient and consequently the wear. In addition, it increases the corrosion resistance.

We also offer a very efficient abrasion method, applied in deburring and masking of roughness created by rolling operations.

Production lot size varies with the features of any given part. Our process distinguishes the following considerations:

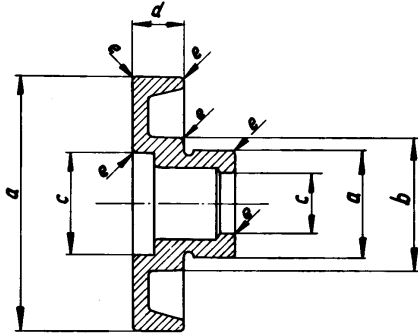
- Optimum quality surface finish
- Adaptation to reach areas with reduced accessibility
- Uniformity of material to be removed
- Uniform reproduction of surface finish from one lot to the another

Even though the «Polissage Maret» surpasses the classic polishing methods, the surface qualities obtained (Ra) depend on the original machined surface finishes. Careful preparation of the parts to be polished is important. In order to guarantee the best results, the parts to be polished have to be as hard as possible, for example, Vickers hardness 600 minimum for heat treatable steel. Annealing to be performed after polishing. The following defects are to be avoided:

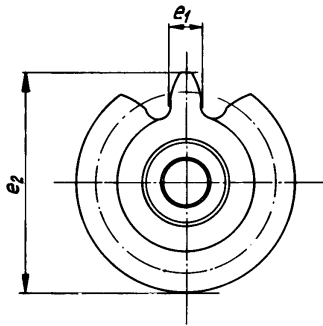
- Insufficient cleaning, leaving contamination of any kind
- Heat treatment resulting in decarbonation, carbon deposits and uneven hardness
- Oxidation and rust
- Burrs and cavity that could retain polishing media
- Small galvanic deposits that could provoke changes during the course of the treatment

The polishing of subassemblies is not recommended and would have to be studied on a case by case basis.

The material above the high end of the tolerance of any given dimension to be removed has to be definitely determined by practical tests. As a first approximation, the two parts shown below can be adopted as a basis.



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|---|-----------------|
| a) Excess material on diameter of cylindrical parts | = 2 - 3 μ |
| b) Excess material on diameter of recessed features | = 1 - 2 μ |
| c) Excess material on diameter of cylindrical holes | = 0 - 2 μ |
| d) Excess material on thickness of two opposite polished surfaces | = 1 - 2 μ |
| e) General chamfering on sharp edges | $\sim R 10 \mu$ |



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|----------------------------------|---|--------------|
| e ₁) Excess material | = | 2 - 5 μ |
| e ₂) Excess material | = | 5 - 10 μ |

2. Materials

Any type of materials can be treated by our process, for example :

- Corundum (Ruby, Sapphire)
- Technical ceramics
- Carborundum
- Low steel alloys of various hardness
- High steel alloys
- Steel with structural hardness
- Stainless steels
- Aluminum alloys
- Platinum alloys
- Special alloys
- Any copper alloys
- Noble metals (Gold, Silver, Titanium)
- etc.

For each material, the polishing «recipe» is individually adapted and treatment executed with the utmost care.

3. Additional Services

In parallel with our «Polissage Maret», we also offer heat treatments such as quench hardening, structural hardening, annealing, etc. on most standard materials. A very even hardness is guaranteed and tested.

We are equipped to offer the following treatments:

- Hardening in inert gas atmosphere up to 950°C
- Annealing
- Gas case hardening
- Annealing in inert gas atmosphere
- Structural hardening in inert gas atmosphere up to 650°C