

How long does a hook last? What is its service life? How many times do we have heard this question! And how many times have we let down our interlocutor, who expected an accurate answer with a certain number of months and years, and to whom, instead, we started to make a long technical reasoning to justify that there is no absolute answer to this question, but only some theoretical data!

The manufacturers of light bulbs guarantee the average life span in thousands of hours, those of cars in thousands of kilometers, and for a sewing machine hook, possible that nobody is able to give an answer? Is it possible that manufacturers of hooks do not know how long their products last?

In order to understand how the life of a hook cannot be known a priori to its manufacturer, we need to deal with technical analysis of the factors that determine the rapidity and the resistance to wear-and-tear.

How it may be logical to think even for someone, who is not familiar with sewing issues, there are some factors that are solely dependent on the manufacturer of the hook, but there are other equally important factors that influence its service life and depend both from the requested use (or by the conditions of use and by the parameters of the application) and from the user of the hook itself.

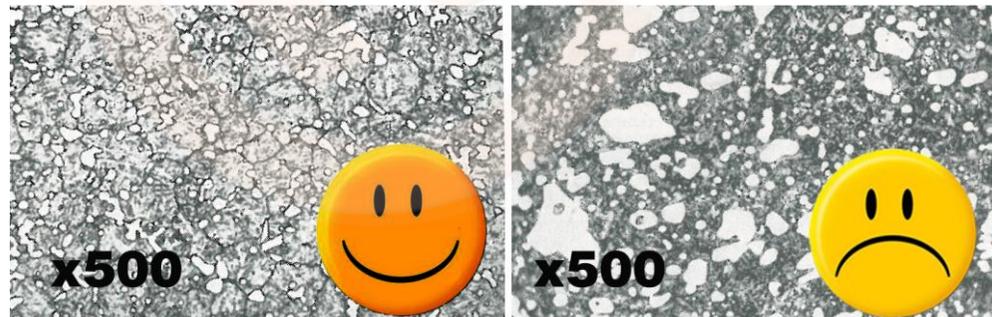
Therefore we are going to divide these factors into 3 categories.

FACTORS THAT DEPEND ON THE HOOKS' MANUFACTURER

1 – Kind of raw material used for the manufacturing of the hook: different types of steel can be used for the construction of the various components of the hook. The specifications of the steel used are defined in the design phase and the choice is directly connected to the qualitative strategy of the manufacturing company. Harder steels will give origin to a hook more resistant to wear, but create machining difficulties with negative repercussions on

production costs.  , thanks to its long experience and the desire to always and only offer hooks of the highest achievable quality, has diversified the choices of steels for the several hook components and using the hardest bearing steels for where the major strain and stress occurs! Also where other manufacturers have opted for the use of synthetic materials (polymers) for some components (i.e. on hooks for household sewing machines) or for

baskets (for sewing without lubrication),  has instead opted for more expensive solutions, always of steel, but with special coatings, in order to always ensure the long service life of the product.



2 – Quality of the raw material: there are many steelworks round the world that supply steel, but not all have the same quality of the product! Higher quality products, which use purest raw materials and with processes that lead to steels with a uniform structure and free of tensions, are certainly more expensive, but provide greater wear resistance and a greater

constancy and reliability over time.  purchases steels only at the finest European steelworks and always accompanied by certificates of casting, chemical and metallography analysis, surface and core analysis by ultrasound and induced currents, in order to have absolute guarantee of the best available quality of the raw material with which manufacture its products.

3 – Heat treatments: after the steel processing by chip removal by turning, milling, drilling, tapping, sanding and smoothing, the semi-finished hooks undergo to heat treatments to obtain the hardness and structure of the final product. For the hook's service life both hardness and surface structure (to ensure the wear resistance) are fundamental, as well as the case-hardening depth (i.e. the thickness of the harder crust, which, as higher it will be, the more it will ensure the durability of the hook), and the core hardness (which must be less than the surface hardness to avoid the fragility of the hook). These treatment are very critical and require a great deal of experience and expensive equipment in order to ensure the best final performance of the hook and a high repeatability level.  nothing leaving to chance, cooperates for years only with the best suppliers of heat treatments, which are the same dealing with the components for aerospace sectors and the Formula 1, where Italy is a star!



4 – Surface coatings: some components of the hook can be coated to increase their hardness and reduce wear or to reduce friction for sliding or simply to protect them against rust. The application of all these coatings depends on the choice of the manufacturer of the hooks. , for example, has introduced years ago hard chromium plating on the baskets of all the hooks of its production, and not just on those for high speed sewing machines.



Furthermore, to obtain high-quality coatings which give the best performance to the hook, great technology and experience is required.  has invested heavily on the hard chrome plating processing performed in its own factory. Many years of exhaustive studies and comparisons with to first rated suppliers in the field of surface coatings have led to the development of special coatings (TS, TTN, DC10, DC20). Many manufacturers of hooks claim to apply certain coatings on their products, but, as they say in Italy "not everything that glitters is gold"! The technology behind a coating of quality, such as behind a quality hook is not easily imitable!

5 – Dimensional precision and surface finish: these aspects contribute to determine the coefficient of friction between the components of the hook in reciprocal movement (in particular between basket and hook body). The lower the friction, the more slow will the wear be and long the hook's service life! These features in the machining processing of the hook can only be achieved with advanced technology and expensive high-precision machine tools that require large investments and long experience.  designs and builds by its own many of the machine tools used for the production of the hooks, so achieving both an extreme automation level and the maximum precision!

FACTORS THAT DEPEND ON THE USE REQUIRED (i.e., the conditions of use)

6 – Type of thread and sewing material: the used threads can be more or less thick and abrasive and the materials to be sewn can release more or less residues that, going to slip into the rotating hook, cause a faster wear

7 – Stitching speed: more higher the stitching speed, more higher the rotation speed of the hook and consequently its wear

8 – Kind of stitching and efficiency of the sewing machine: during the operation hours of the sewing machine, the percentage of the time of actual hook rotation can vary greatly. Here are some examples:

- a) if the machine is used by a craftsman or inserted in a linear production line
- b) if within the production line it performs an operation with equal time to the cadence of the line (constitutes a bottleneck) or with shorter times and therefore also with waiting times
- c) if the seams are performed for long stretches (as for example for a pant leg) or for short strokes and interrupted
- d) if there are automated systems such as embroidery or quilting sewing machines or automatic pocket setting units

9 – Daily operation hours of the sewing machine and monthly and annual working days: clearly if the sewing machine operates on 2 or 3 shifts, the use of the hook will double or triple compared to a machine that sews on a single shift!

10 – Lubrication of the hook: the presence of a lubrication system on the sewing machine reduces the friction between the components of the hook and reduces the wear, thus increasing the service life

FACTORS THAT DEPEND ON THE USER OF THE HOOK AND ON THE SEWING MACHINE

11 – Proper maintenance of the hook:

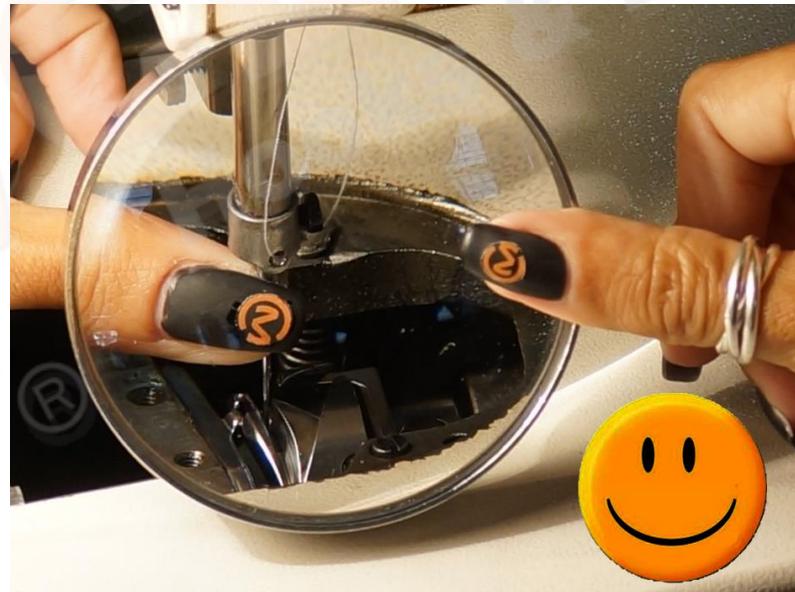
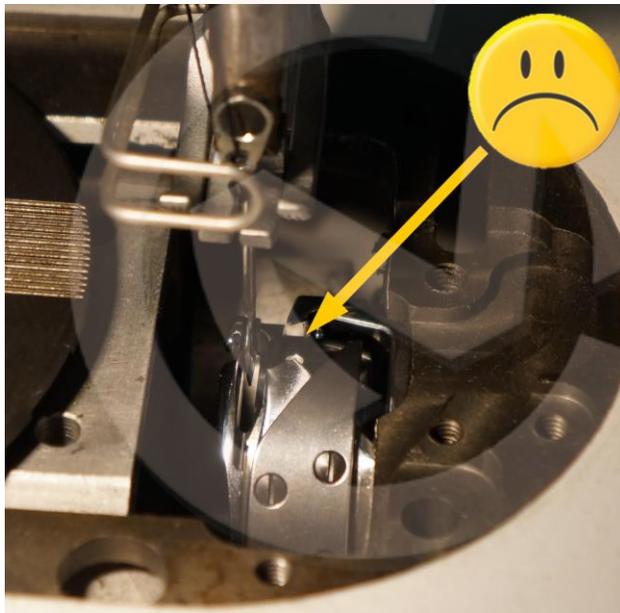
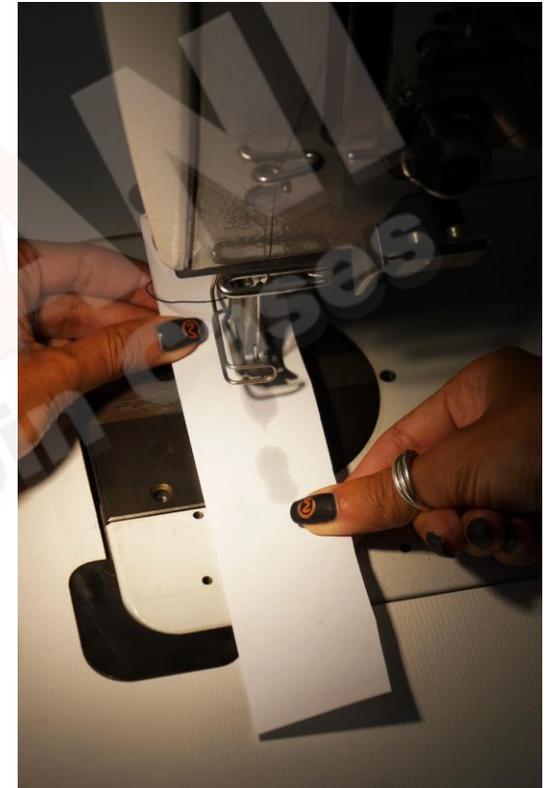
not all technicians realize how much a proper maintenance of the hook lengthen incredibly its life, so to even double it! The regular and periodic maintenance includes the removal of any lint or fuzz from the hook (the frequency depending on the application conditions as described above) and an abundant manual lubrication with subsequent idle rotation for cleaning the hook, the lubrication and protection from oxidation. For a more complete description of periodic maintenance, please refer also to the relevant technical

data sheets issued by 



12 – Proper adjustment of lubrication: for the life of the hook a proper lubrication is fundamental. If the sewing machine is not equipped with an automatic lubrication system for the hook, it is necessary to provide for a periodic lubrication of the same, its frequency depends on the application conditions described above. If the sewing machine is equipped with an automatic lubrication system it is necessary to guarantee the regular and correct oil flow reaching the hook, through proper adjustment of the lubrication system, the checking and topping up of the oil level in the tank of the sewing machine and the regular cleaning of the lubrication ducts on hook that can become clogged by lint and fuzz. An insufficient lubrication can halve the life of the hook or even seize it and make it immediately unusable. The frequency of manual lubrication and cleaning of the hook, can be reduced through special coatings of the hook as the DC10 and DC20 particularly recommended for dry stitching or with very little lubrication (DC20 and DC10) and the seams in the presence of highly abrasive materials (DC10).

13 – Proper installation of the hook: it prevents accidents and a premature end of life of the hook, not because of wear, but for damage. The most frequent result of an incorrect installation and timing of the hook, are accidents with the needle that, in addition to damage or break the needle that has to be replaced, can damage the hook itself. The most prone to damage is the hook point, which, if damaged, can make the hook unusable

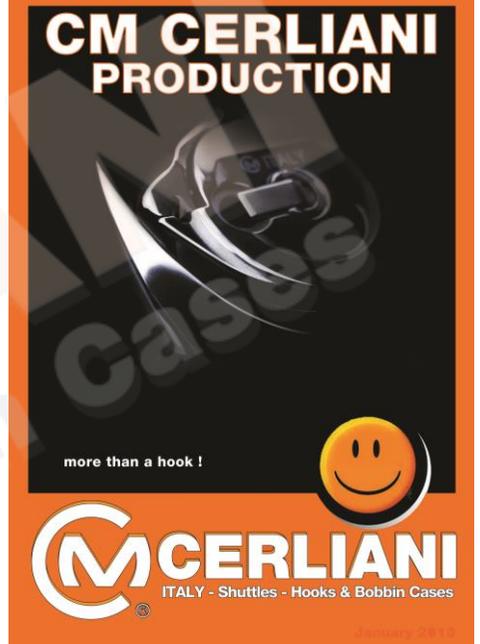


14 – Correct choice of the hook type: each sewing machine is designed for the use of a specific hook and it is important that the choice of the type of hook is done carefully. For many sewing machines  proposes even more as one hook type, depending on the application, the thread and the needle. For rotary hooks is important to choose the correct execution of the hook according to the needle system used, in order to have the correct function of the needle guard plane and prevent accidents i.e. collisions between needle and hook point:

see also  technical data sheets regarding the "FA" or "FB" executions of the hooks. Instead, in the case of vertical hooks, the adjustment of the needle guard is made by the technician at the time of installation of the hook: for a more accurate safer adjustment  has developed an unique patented adjusting needle guard system: please refer to  the technical data sheets regarding the "R" execution.



15 – Right choice of the manufacturer of the hook: Needless to say, the right choice can be one the one that guarantees of first class quality hook such as .



IN CONCLUSION

Only one-third of the factors that determine the life of the hook depends on the manufacturer of the hook! Another third depends on the required use, which is established by the product specifications and demands of end customers and their designers. The last third depends ultimately on the user of the hook and the sewing machine: its operator, its technician, the maintenance given to it and also on the purchase department that should always choose a high quality hook!

For all these reasons, the manufacturer of the hook cannot say a priori how long his hook will work, he can only guess that it varies from 3 months to 3 years depending on the applications and users.

What you can do instead are some comparisons:

- A quality hook can last 2 or 3 times longer than a hook of media quality
- In some particularly demanding applications, a DC10coating increases by 2.5-3 times the service life of the hook
- A correct and constant maintenance can double the life of the hook
- A poor lubrication can halve the life of the hook or even seize it and make it unusable immediately

So you cannot say absolutely how long a hook will last, but you can tell that under equal conditions, the life of the hook will increases or decreases in percentage.

Unfortunately it is not so easy for an end user to make comparisons, because these require time and accurate records and statistical analysis that only large groups can afford. However, this is also the reason why the large international groups want only the best quality hooks in their plants and more

and more of them rely on the  brand!

They were able to verify that a quality hook lasts much longer and fully repays the initial price difference!

The next time you buy a hook, do not forget to ask for a !!!!!!